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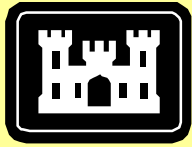
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# **Louisiana Coastal Protection and Restoration**

## **ENCLOSURE J**

### **Project Management Plan**

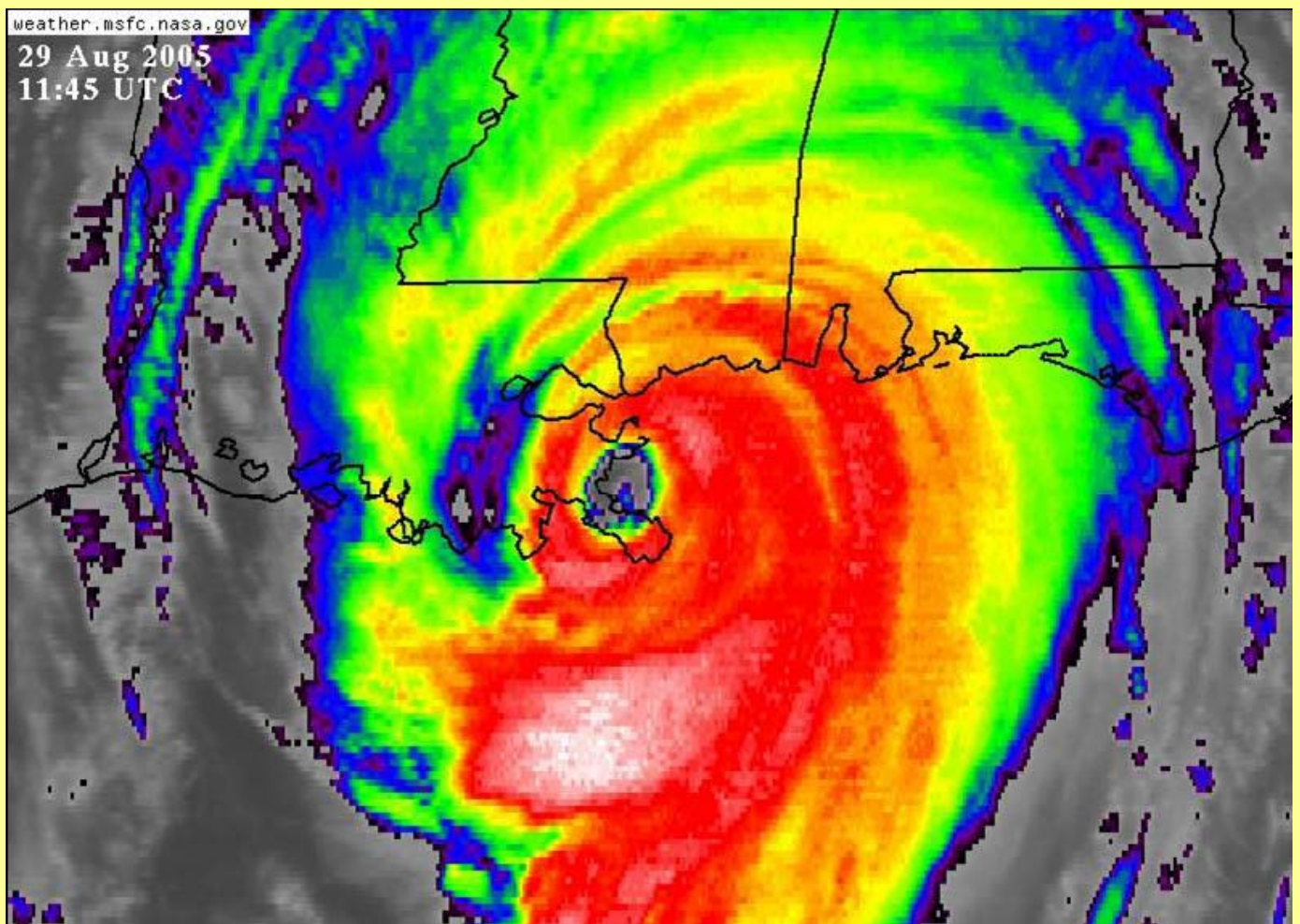
Preliminary Technical Report to Congress  
June 2006



US Army Corps  
of Engineers

# Project Management Plan

## Louisiana Coastal Protection and Restoration (LACPR), Louisiana



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June 2006

**Louisiana Coastal Protection and Restoration (LACPR)  
Project Management Plan**

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**Louisiana Coastal Protection and Restoration Project (LACPR)  
Project Management Plan**

**1. Executive Summary.**

This Project Management Plan (PMP), for the Louisiana Coastal Protection and Restoration Project (LACPR), Louisiana, describes a process for completing a Preliminary Technical Report (PTR) and Final Technical Report (FTR) as directed by Congress. Each must be completed within six and twenty four months, respectively, from the date of enactment of the authorizing legislation. These reports will describe findings of technical analysis and design for several alternatives of increased, comprehensive hurricane protection across South Louisiana, integrating the water resources objectives of hurricane protection, coastal restoration, flood control, and navigation.

The PTR and FTR will not be conducted as feasibility studies. They will consist of engineering analysis and design, advanced using the best science and engineering available. The PTR will describe a preliminary solution developed based on existing data and information. This report has a target completion date for submittal to higher authority of June 1, 2006. Following this, higher authority will conduct draft PTR review/comment to revise/finalize and present the PTR to Congress by June 30, 2006. Additional data and information will be acquired to conduct the FTR, which will describe comprehensive plan. The FTR has a target completion date for submittal to higher authority of October 1, 2007, for their review/comment, and report revision/finalization and presentation to Congress by December 30, 2007.

Traditionally, feasibility studies are conducted with companion Environmental Impact Statements (EISs) to address water resources problems and needs, pursuant to a specified objective, such as navigation, flood control, or hurricane protection. These processes are respectively conducted under established laws, policies, and regulations, for the purpose of: (1) recommending a National Economic Development (NED) Plan, and (2) identifying significant resources that would be impacted by a proposed Federal action, with description of significant resource protection and mitigation plans, as required. In this case, the reports will be developed following exceptions to normal policy considerations but will still include preparation of a Programmatic Environmental Impact Statement (PEIS).

The USACE is consulting with other Federal Agencies, the State of Louisiana, and its agencies to define the organizational structure and teams that will perform this work. The State of Louisiana has established a Coastal Protection and Restoration Authority (CPRA) for this purpose, which will identify and integrate State, parish, and local interests, as well as that of Non-Governmental Organizations (NGOs). The CPRA will be the single State entity that will interface with the USACE on project coordination, and will designate agencies and individuals to work with USACE on the project. The Project Delivery Team will include experts in science and engineering inside and outside government, nationally and abroad. Sister districts along the Gulf Coast and Planning Centers of Expertise will serve as assistant technical peers. During project development, peer review will be solicited from national science and engineering

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organizations, regarding the planning, engineering, and science approaches. Independent Technical Review (ITR) will be conducted to check detailed work of the PDT.

A Programmatic EIS will be initiated with beginning the development of the preliminary report, but will be advanced as a parallel, separate effort intended for completion and integration with the final report. The USACE will coordinate with Federal and State resource agencies during the environmental compliance process. The PTR will use public input derived from the PEIS process, but its completion will not be dependent on completion of the PEIS. Possible outcomes beyond completion of these reports could be direction by higher authority to initiate one or more feasibility studies. Alternatively, there could be direction for advancement directly into Pre-Construction, Engineering, and Design (PED) of features contained in either the PTR or FTR. The PEIS will cover that portion in more detail so that all environmental compliance is complete and construction can begin.

### 2. Introduction.

#### a. Purpose and Authority.

(1) Project Name and State. South Louisiana Hurricane Protection, LA

(2) Congressional Direction Source. The Energy and Water Development Appropriations Act, 2006 (P.L. 109-103), 19 November 2005; The Department of Defense Appropriations Act, 2006 (P.L. 109-148) 30 December 2005.

(3) Description of Added Work.

The Department of Defense Appropriations Act of 2006 states “SEC. 5009. Public Law 109–103 is amended under the heading “Corps of Engineers—Civil, Investigations”, by striking “*Provided further*, That using \$8,000,000” and all that follows to the end of the paragraph, and inserting in lieu thereof, “*Provided further*, That using \$8,000,000 of the funds provided herein, the Secretary of the Army, acting through the Chief of Engineers, is directed to conduct a comprehensive hurricane protection analysis and design at full federal expense to develop and present a full range of flood control, coastal restoration, and hurricane protection measures exclusive of normal policy considerations for South Louisiana and the Secretary shall submit a preliminary technical report for comprehensive Category 5 protection within 6 months of enactment of this Act and a final technical report for Category 5 protection within 24 months of enactment of this Act: *Provided further*, That the Secretary shall consider providing protection for a storm surge equivalent to a Category 5 hurricane within the project area and may submit reports on component areas of the larger protection program for authorization as soon as practicable: *Provided further*, That the analysis shall be conducted in close coordination with the State of Louisiana and its appropriate agencies.”

The Department of Defense Appropriations Act of 2006 also states “*Provided further*, That none of the \$12,000,000 provided herein for the Louisiana Hurricane Protection Study shall be available for expenditure until the State of Louisiana establishes a single state or quasi-state entity to act as local sponsor for construction, operation and maintenance of all of the hurricane, storm damage reduction and flood control projects in the greater New Orleans and southeast

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Louisiana area.” Current interpretation of this language is that these funds will require local cost sharing at a 50-50 ratio. See financial data table and note below for further details.

(4) Authorization. Title 1, Investigations, Energy and Water Development Appropriations Act of 2006.

(5) Decision Document. None. A preliminary technical report and a final technical report will be prepared.

(6) Relationship to Executive Branch Policy. Inconsistent. Violates policy of two-phase planning process. Directive language exempts the project from normal Corps policy.

(7) Congressional Interest. Landrieu, LA-SN; Vitter, LA-SN; Jindal, LA-1 ; Jefferson, LA-2 ; Melancon, LA-3; McCrery, LA-4 ; Alexander, LA-5 ; Baker, LA-6 ; Boustany, LA-7.

(8) Summarized Financial Data. Report to Congress (Feasibility equivalent)

Estimated Federal Cost	\$20,000,000
Estimated Non-Federal Cost*	12,000,000
Total Estimated Project Cost	32,000,000
Allocations through FY 2005	0
Budget Request for FY 2006	0
Conference Amount for FY 2006	8,000,000
Allocation for FY 2006	8,000,000
Budget Request for FY 2007	12,000,000
Balance to Complete after FY 2007	0

\*Current Corps of Engineers interpretation of authorizing legislation indicates that cost sharing will be required for the second appropriation of \$12,000,000. The State of Louisiana is aware of this interpretation and may choose to pursue legislative clarification of the language. Should the language be further clarified, the estimated costs may be adjusted.

(9) Recommended Implementation Plan for Added Work. Additional FY06 GI funds will be used to complete a preliminary technical report for comprehensive Category 5 hurricane protection and to prepare a final technical report for Category 5 protection. Reports will present a full range of flood control, coastal restoration and hurricane protection measures exclusive of normal policy considerations. The normal policy considerations that will be excluded include National Economic Development analysis, and the minimum 800-cfs drainage capacity as specified in ER 1165-2-21 (Flood Damage Reduction Measures in Urban Areas). The scheduled completion date of the preliminary technical report is June 2006 and the scheduled completion date for the final report is December 2007.

b. Policy Guidance.

The MVD Regional Integration Team has issued a Policy Guidance Memorandum (see Appendix A) on the Louisiana Coastal Protection and Restoration Project (formerly South Louisiana Comprehensive Coastal Protection and Restoration Project) to provide direction to the

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project delivery team in conducting the report preparations. The importance of the memorandum is that it expresses the examination of a full range of hurricane protection measures, including Category 5 storm protection from Pearl River to Sabine River and notes specific direction to the team regarding NEPA, scope of analysis, exception to NED procedures, and integration of other coastal restoration planning efforts. The PGM further outlines the need for coordination with storm protection initiatives in coastal Mississippi and collaboration with the IPET and utilization of information developed under its purview. All analyses will be included in technical reports for the Chief of Engineers and the Assistant Secretary of the Army (Civil Works) (ASA(CW)) to provide to the Congress. The level of detail in the Final Technical Report should be commensurate with seeking project authorization except as noted in the policy exclusions. The guidance was developed in coordination with input from MVN, MVD, and USACE HQ, the State of Louisiana and several partnering Federal resource agencies.

### c. Description of Existing Projects and Studies.

Historically, some hurricane protection had been provided to metropolitan New Orleans in a few areas but it was not until Hurricane Betsy hit the city in 1965, causing more than \$8 billion of damage (in 2002 currency value) and losing 75 lives, that a comprehensive hurricane protection program was initiated. The New Orleans and Southeastern Louisiana region consists of three hurricane protection projects.

(1) The “Lake Pontchartrain, La., and Vicinity Hurricane Protection Project” was authorized in 1965 and was modified in 1974, 1986, 1990, and 1992. The project lies between the Mississippi River and Lake Pontchartrain, and is located in St. Bernard, Orleans, Jefferson, and St. Charles Parishes in southeast Louisiana, (generally the greater New Orleans metropolitan area-east bank), and also includes a mitigation dike on the west shore of the lake. The project was designed to protect residents from surges in Lake Pontchartrain driven by storms up to the Standard Project Hurricane (SPH). The SPH is equivalent to a fast-moving category three hurricane. The project includes:

(A) New levee from the Bonnet Carré Spillway East Guide Levee to the Jefferson-St. Charles Parish boundary

(B) Floodwall along the Jefferson-St. Charles Parish line

(C) Enlarged levees along the Jefferson and Orleans Parish lakefronts

(D) Parallel protection (levees, floodwalls, and flood proofed bridges) along the 17th Street, Orleans Avenue, and London Avenue outfall canals

(E) Levees from the New Orleans lakefront to the Gulf Intracoastal Waterway (GIWW)

(F) Enlarged levees along the GIWW and Mississippi River-Gulf Outlet (MR-GO)

(G) New levee around the Chalmette Area.

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(2) Urbanization into the wetlands and the potential hurricane threat led to authorization of construction of the West Bank hurricane protection project on the right descending bank of the Mississippi River. The project is located in Orleans, Jefferson and Plaquemines Parishes, and in metropolitan New Orleans on the west bank of the Mississippi River. The “West Bank and Vicinity, New Orleans, Louisiana, Hurricane Protection Project” was authorized in 1999 by combining three projects that were authorized in 1986 and 1996. The project is designed to protect residents on the west bank from storm surges from Lake Cataouatche, Lake Salvador and other waterways leading to the Gulf of Mexico driven by storms up to the SPH. The project includes:

(A) 22 miles of earthen levee and 2 miles of floodwall extending from the Harvey Canal south to the V-levee near the Jean Lafitte National Historical Park and back up to the town of Westwego.

(B) The Lake Cataouatche area eliminated the west-side closure in Westwego, and added about 10 miles of levee and 2 miles of floodwall

(C) A sector floodgate in the Harvey Canal and about 25 miles of levee and 5 miles of floodwall east of Harvey Canal area.

(3) Down river and south of New Orleans, hurricane protection is provided by the “New Orleans to Venice Project”. This project is located along the east bank of the Mississippi River from Phoenix, Louisiana, (28 miles southeast of New Orleans) down to Bohemia, Louisiana, and along the west bank of the river from St. Jude, Louisiana, (39 miles southeast of New Orleans) down to the vicinity of Venice, Louisiana. The project was authorized in 1962, as the “Mississippi River Delta at and below New Orleans, Louisiana Project” and later renamed as the “New Orleans to Venice Project”. The project will protect residents from hurricane tidal overflows created by storms with a return period of 100 years. The protected area encompasses approximately 75% of the population and 75% of the improved lands in the lower Mississippi River delta region.

(4) Coastal erosion in Louisiana has been the focus of Federal, State and local attention for more than 35 years. Documented annual losses of coastal wetlands exceeding 25 square miles per year have lead to authorization of various programs and projects to address coastal land loss problems in the State. It is widely believed that the loss of wetlands and other habitats along the coast are leading to higher levels of risk from tropical storms and hurricanes for communities in the coastal zone. The Coastal Wetlands Planning, Protection and Restoration Act of 1990 provides for annual priority project lists to address wetlands erosion and land loss in the State. To date more than 150 projects have been identified and authorized for engineering and design and about 75 projects have been constructed across the coastal zone. Additional measures have been recommended to Congress in the Louisiana Coastal Area Ecosystem Restoration Study completed in November 2004. Recommendations in that study are pending Congressional authorization.

### **3. Problems, Needs, and Opportunities.**

Hurricane Katrina struck the coasts of Louisiana, Mississippi, and Alabama on August 29, 2005. This hurricane produced a surge exceeding the Standard Project Hurricane (SPH) of a fast



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moving Category 3 storm, causing high loss of life and property damage in the New Orleans metropolitan area, St. Bernard Parish, Plaquemines Parish and the Mississippi Gulf Coast. Hurricane Katrina created breaches in the floodwalls along the 17th Street Canal, the London Avenue Canal, and the Inner Harbor Navigation Canal. Water flowed from Lake Pontchartrain through the breaches and inundated large urban areas in New Orleans to depths of up to 20 feet. The levees in Eastern New Orleans, St. Bernard Parish, and Plaquemines Parish were overtopped and water inundated other urban areas surrounding the city of New Orleans. Along the Mississippi coast, the storm generated a storm surge exceeding 30 feet. Three weeks later on September 21, 2005, hurricane Rita made landfall as a strong Category 3 near the Louisiana-Texas border causing loss of life and widespread property damage from winds and storm surge. The passage of hurricane Rita also brought flood waters back into parts of southeast Louisiana through weakened, damaged or destroyed sections of the hurricane protection system.

According to the 2004 Louisiana Coastal Area report, over 500 square miles of coastal land loss occurred from 1978-2000 in subprovinces 1-3, which extends from St. Tammany Parish to Freshwater Bayou. This coastal land provided a buffer for storm surge. According to the USGS, hurricanes Katrina and Rita caused another 120 square miles of loss. This critical buffer worked in conjunction with levee systems to protect life and property.

A multi-objective, comprehensive technical evaluation of the existing hurricane protection system is needed to determine the level of protection for a suite of critical design storms that are reasonably characteristic and could possibly impact South Louisiana. The water resources mission areas of hurricane protection, flood control, interior drainage, navigation, and ecosystem restoration, must be integrated synergistically during plan formulation and evaluation to identify preliminary plans and designs that would provide increased hurricane protection for the Metropolitan New Orleans area and the rest of South Louisiana, as well as avoid and minimize unintended consequences of taking such actions.

In preparation of the six month Preliminary Technical Report, it will be opportunistic to leverage work being conducted to characterize the state of the existing hurricane protection system. A performance evaluation of the existing authorized project is currently being conducted using observation, testing and deduction, to determine the probable cause of the damage or deterioration during recent catastrophic storm events. The USACE Chief of Engineers requested an Interagency Performance Evaluation Task Force (IPET) and External Review Panel (ERP) to provide credible, objective engineering and scientific answers to determine:

- a. Storm surges and waves generated by Hurricane Katrina and locations/extent of overtopping,
- b. Performance of floodwalls, levees and drainage canals, acting as an integral system, during and after Hurricane Katrina,
- c. Performance of pumping stations, canal gates and road closures, acting as an integral system, for preventing and evacuating the flooding due to Hurricane Katrina,

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d. Condition of the hurricane protection system before and after Hurricane Katrina and, as well as capability of the protection system to prevent inundation from future hurricanes and tropical storms.

During conduct of this work, the IPET and ERP are collaborating with the National Research Council (NRC) as requested by the Assistant Secretary of the Army (CW).

#### **4. Purpose and Scope.**

This PMP is drafted with the intent to define and address technical report requirements pursuant to legislative directives calling for investigating comprehensive coastal protection and restoration study for South Louisiana.

As stated in Section 2 of this document, authorization and direction for this project is granted under the Energy and Water Development Appropriations Act of 2006 passed in November 2005 and the 3<sup>rd</sup> Supplemental Emergency Appropriation passed on 30 December 2005 as part of the Defense Appropriations Act. The purpose and scope of this investigation is further defined by the draft House Resolution and Senate legislation. The following interpretations are made as to project purpose and scope based upon signed legislation:

- The purpose of the project is to identify a plan for increased protection against storm surge equivalent to a Category 5 hurricane within South Louisiana.
- The scope is to address the full range of flood control, coastal restoration and hurricane protection measures needed for comprehensive Category 5 protection.

Re-stated succinctly from Section 3, the need is to integrate hurricane protection, flood control, and ecosystem restoration objectives into a consistent and interoperable plan.

For purposes of this investigation, the design area includes all Parishes within the Louisiana Coastal Area as defined in Louisiana Coastal Area, Ecosystem Restoration Study, November 2004 (Figure 1).

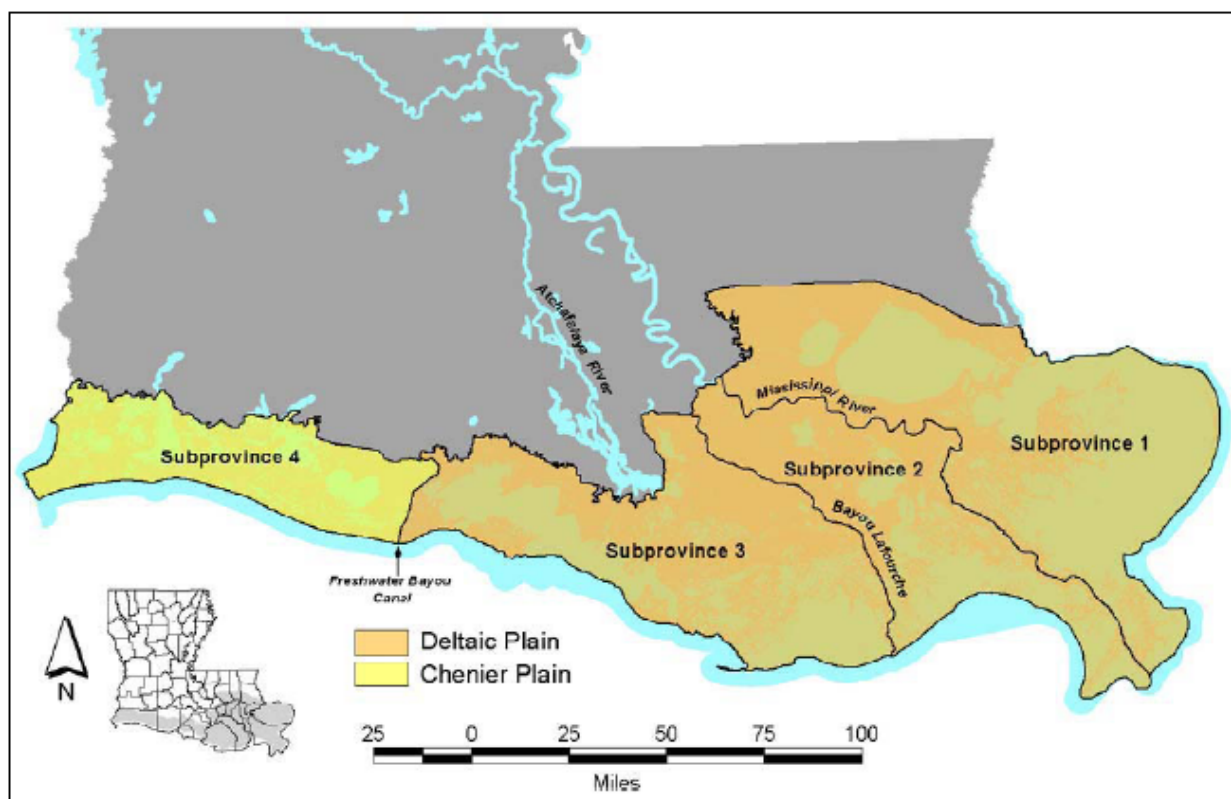


Figure 1. Project Area Map.

## 5. Report Product Descriptions.

a. Overview. A Preliminary Technical Report will be submitted to Congress within 6 months (30 June 2006) of the authorization act and a Final Technical Report will be prepared within 24 months (30 December 2007).

Technical reports to be produced will address engineering analysis and design requirements, to include considerations for construction, operations and maintenance requirements, as well as costs, for specific alternatives as described in the Purpose and Scope of Section 4, for a Suite of Critical Design Storms and Conditions (SCDSC), which would impose the most severe possible and probable surge and wave impacts. This effort is not a feasibility study and will: (1) not involve formulation, evaluation, and comparison of multiple alternatives and iterations; and (2) not involve performing an economic analysis to identify National Economic Development (NED) plans.

A Programmatic Environmental Impact Statement (PEIS) will be developed during project development. The PTR will be conducted in parallel with the initiation of a PEIS, but will not be dependent on completion of the PEIS, nor will the PTR incorporate results of a PEIS. The PEIS will continue beyond completion of the PTR to support advancement of the FTR.

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b. Preliminary Technical Report.

Due to the accelerated schedule for delivery of the Preliminary Technical Report (PTR), there will be limitations to the analysis that can be performed and the level of detail that can be included in this interim work product. Considering the need to integrate hurricane protection, flood control, and ecosystem restoration objectives, the primary work efforts will focus on:

- Characterizing previously conducted examinations of increased hurricane protection for South Louisiana;
- Portraying innovative, conceptual, multi-objective water resources alternative plans that will be developed further in the Final Technical Report (FTR);
- Presentation of a refined PMP for completion of the FTR; and
- Recommendations for component areas for authorization of protection plans.

(1) Schedule. The PTR is due six months from enactment of the Energy and Water Development Appropriations Act of 2006 passed on December 30, 2005. This report has a target completion date for submittal to higher authority by June 1, 2006. Following this, the draft PTR will undergo review/comment for its revision/finalization and presentation to Congress by June 30, 2006.

(2) Activities. The following primary activities will be performed during the development of the PTR:

(A) Conduct a scoping meeting/workshop with interested parties to discuss: (1) views on goals to be achieved, (2) issues of concern, (3) strategies to implement goals and address concerns, and (4) identify alternatives and associated measures to accomplish strategies. The aim would be to meet requirements of NEPA in the process.

(B) Based on the results of the scoping meeting/workshop with interested parties, assemble up to three innovative conceptual alternatives for preliminary examination.

(C) Conduct hydrodynamic modeling of innovative conceptual alternatives for the purpose of screening of alternatives during a fatal flaw analysis (i.e., system performance for adequate increased protection, as well as identification of critical unintended consequences).

(D) Identify standard designs and innovative technologies for design and construction and use this information to conceptually portray engineered features of up to three innovative conceptual alternatives for further analysis into the FTR phase.

(E) Seek rights-of-entry for field data collection. Where possible, initiate detailed field data collection.

(F) Need to develop non-structural measures to include elevating structures, possible increase in base flood elevations, and evacuation routes.

(G) Develop a set of ecosystem restoration plan components for integration into a Category 5 protection plan. Coastal restoration features will be defined to highlight

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contributions to the overall protection system including storm surge reduction, levee protection buffers, wind shields, and long-term operations and maintenance contributions to both with and without project scenarios.

(H) Update PMP components for advancing into the FTR phase.

(I) Recommend component areas for authorization of protection plans.

(J) Host three technical workshops to develop baseline information and approaches using the local, national and international experts in various technical component fields associated with developing an integrated hurricane protection system. Workshop topics will include (1) meteorological considerations for developing a design storm, (2) plan formulation for alignment features and supporting measures, and (3) innovative engineering and design standards for analysis and system incorporation.

(3) **Preliminary Technical Report Content.** Information provided in the preliminary report is intended to address the threats posed by a Category 5 hurricane to the Louisiana coast, the communities and resources at risk, how to protect south Louisiana from a Category 5 storm, and how much that protection system would cost. The content of the PTR will include the following items:

(A) Clarification of goals and objectives; development of draft evaluation criteria.

(B) Definition of planning units within the study area.

(C) Draft list of potential Management Measures.

(D) Initial development of innovative conceptual alternatives.

(E) Description of process for screening/developing innovative conceptual alternatives. This would include modeling, conceptual engineering and design, innovative construction technologies and cost estimating, and impacts to significant resources.

(F) Develop PMP with State of Louisiana for next phase (FTR).

### c. Final Technical Report.

The primary work efforts for the FTR will focus on developing an engineering analysis and design document similar in level that would be conducted in a traditional Corps of Engineers Feasibility Study, but excluding those components of a traditional feasibility study outside of engineering analysis and design. The level of engineering analysis and design that will be conducted in the FTR will be completed to the level for developing an engineering cost estimate, as well as for use in determining environmental benefits and impacts. The FTR will also include a Draft Programmatic EIS.

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(1) **Schedule.** The FTR is due twenty-four months from enactment of the Defense Appropriations Act of 2006 passed on December 30, 2005. This report has a target completion date for submittal to higher authority on October 1, 2007. Following this, the draft FTR will undergo review/comment for its revision/finalization and presentation to Congress by December 30, 2007.

(2) **Activities.** The following primary activities will be performed during the development of the FTR:

(A) Incorporation/consideration of community/urban plans.

(B) Field data collection (topographic, geotechnical, water quality, real estate, environmental conditions, and cultural resources).

(C) Habitat value assessment and development of environmental baseline data.

(D) Model development and application, including geotechnical and structure considerations, as well as establishment of design criteria, runs for SCDSC, and fatal flaw analysis for the Probable Maximum Hurricane (PMH) conditions.

(E) Public outreach and involvement.

(F) Interagency and vertical team coordination.

(3) **Final Technical Report Content.** The content of the FTR will include the following items:

(A) Definition of Final Evaluation Criteria and Performance Measures.

(B) Definition of Final Management Measures.

(C) Development of Draft Array of Alternatives (DAAs).

(D) Screening of DAAs.

(E) Identification of Final Array of Alternatives (FAAs).

(F) Evaluation of FAAs.

(G) Conceptual design and cost estimates for FAAs.

(H) Technical Evaluation of FAAs – for consideration and possible action by Congress.

(I) Consequences analysis of assets at risk including assessment of the four Planning & Guidance accounts.

(J) Programmatic Draft EIS.

## 6. Organizational/Work Breakdown Structure, Roles/Responsibilities, and Communications.

a. Organizational Structure Development Process. The organizational structure will be fully developed in coordination with members of the Vertical Team shown in Figure 2, and will be revised as necessary to meet changing needs and conditions. Development of the organization structure is being closely coordinated with the State of Louisiana to ensure full participation of State government and other local concerns. The three levels of structure are Strategic, Operational, and Tactical. Each level will have roles and responsibilities to achieve the Congressional direction. Use of the Vertical Team and Project Management Business Process will ensure responsive communication on study direction, resolution of policy issues, and expeditious and integrated reviews to achieve the aggressive schedule. Coordination with the State of Louisiana is essential for the successful accomplishment of the report. The State has designated the Coastal Protection and Restoration Authority as the primary point of contact for interaction with the Corps of Engineers on coastal protection and restoration matters. USACE components will interact directly with the State of Louisiana's Coastal Protection and Restoration Authority with the goal of leveraging resources and strategies in crafting the Reports to Congress and the State's Master Plan for coastal protection and restoration.

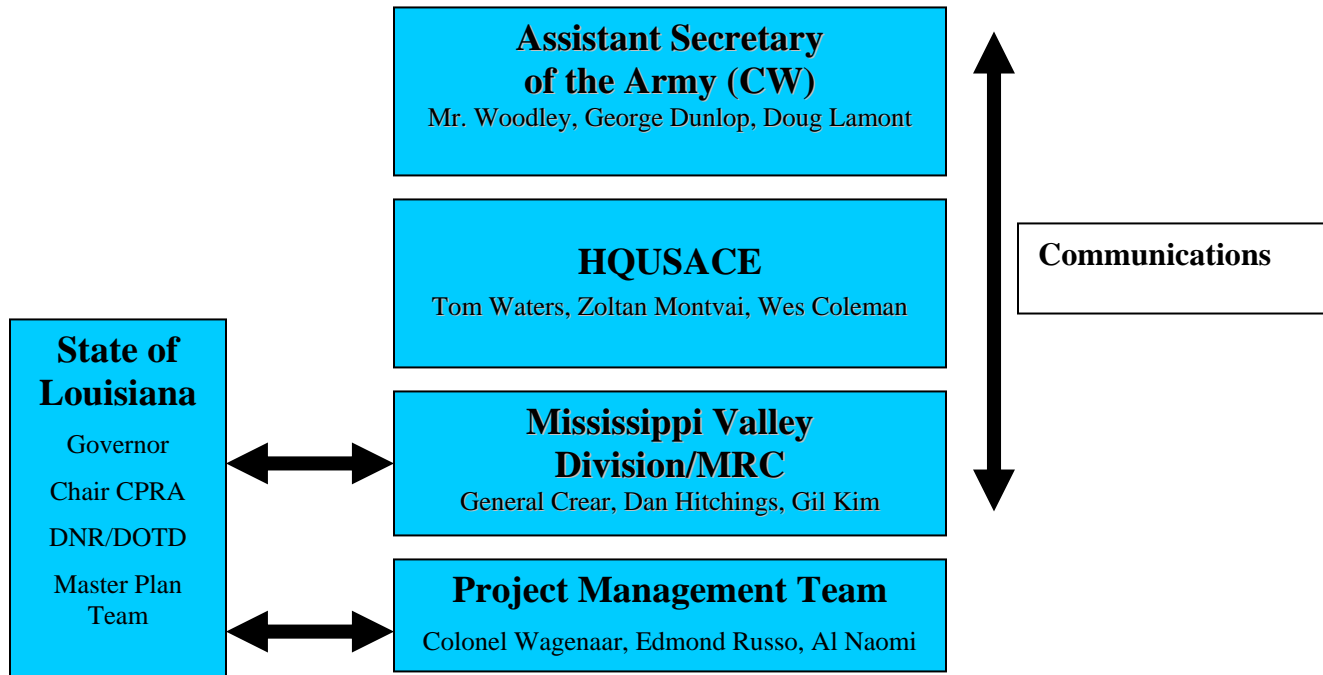


Figure 2. Vertical Team.

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b. Organizational Structure and Communications Pathways. Figure 3 presents the organizational structure. A description of the three levels of the organizational roles and responsibilities of each level is presented below.

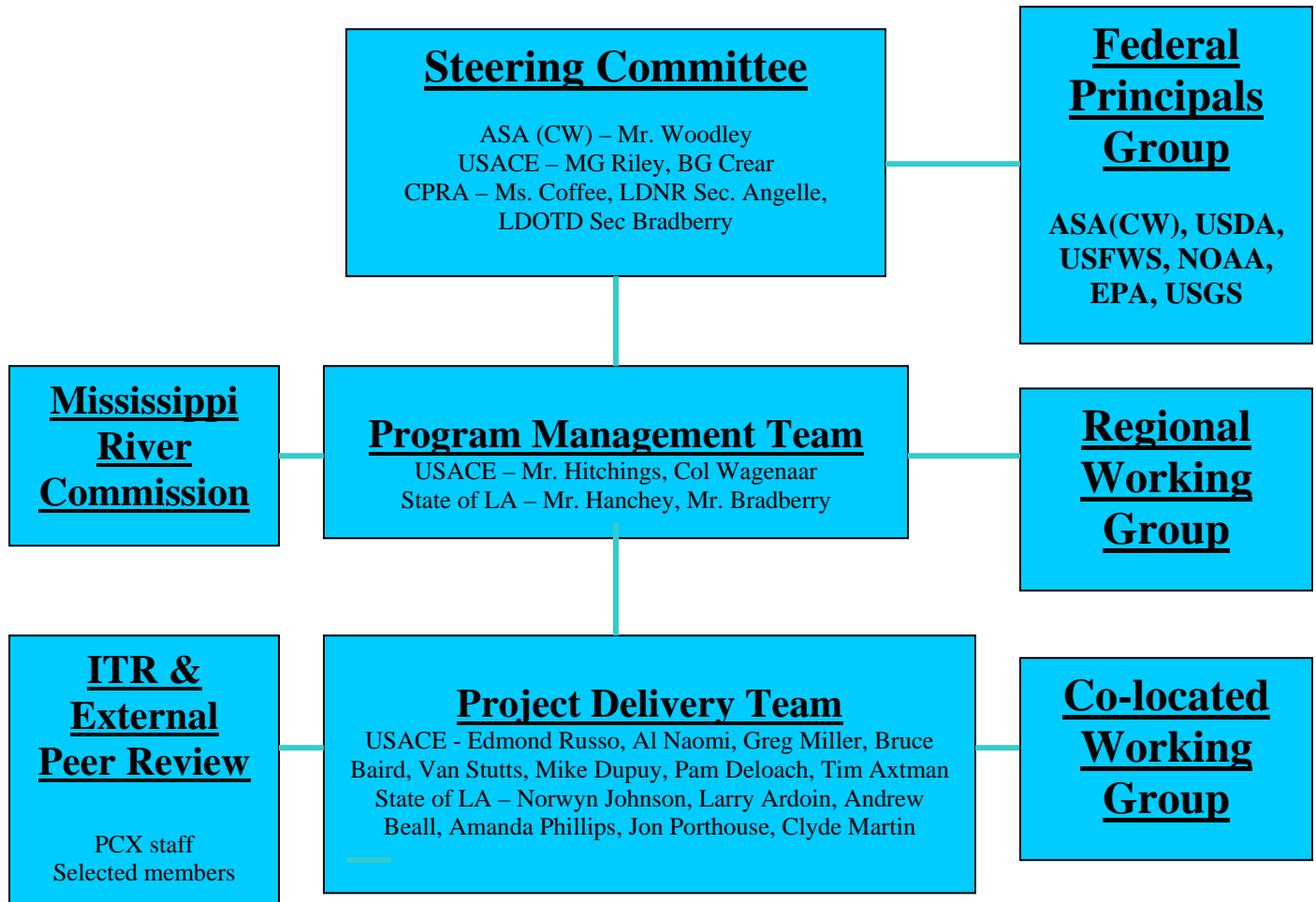


Figure 3. Organizational Structure.

(1) Strategic Level. The role of the Steering Committee at the Strategic Level is to provide executive level policy, oversight and review of the report preparation efforts. Full integration of the committee into the workings and progress of the teams will be critical for meeting the mandated schedules for the reports.

The Steering Committee as shown in Figure 4 will consist of the State of Louisiana Secretary of Natural Resources, Secretary of Transportation and Development, and Chairperson of the Coastal Protection and Restoration Authority, and Federal Government Assistant Secretary of the Army for Civil Works ASA (CW) and Headquarters (HQ), USACE, and Commander, Mississippi Valley Division. The ASA (CW) and HQ USACE will provide final law, policy, and



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regulations guidance. The Steering Committee will receive monthly updates on study progress and provide overall direction through the Program Management Team to the Execution Team. The Steering Committee will also provide reports on study status to Congressional, Federal, and State of Louisiana Congressional delegation interests.

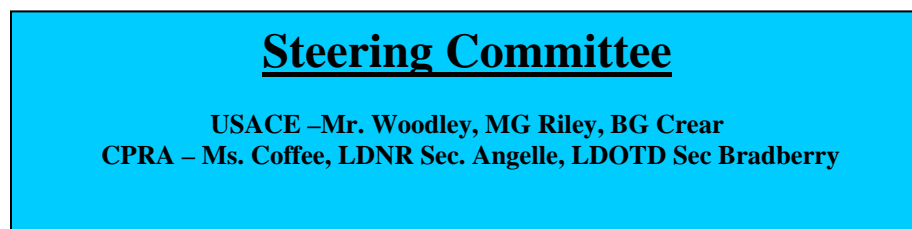


Figure 4. Steering Committee.

(2) Operational Level. The role of the Program Management Team (PMT), shown in Figure 5, at the Operational Level is to provide program overview, execution guidance, and priority definition.

The PMT will include MVD and the State of Louisiana. The USACE Mississippi Valley Division Commander's representative and a designee from the State of Louisiana Governor's Office will co-chair the PMT. Decisions will be made by consensus. Issues that cannot be resolved by the PMT will be referred to the Steering Committee for decision. The PMT will have final decision authority for directing project work. A designee from the State of Louisiana Governor's Office will act as vice-chair of the PMT. The role of the State will be essential in providing contacts and information from State agencies for work on project teams and in coordinating information exchange associated with development of the State Master Plan for Coastal Protection and Restoration. The State of Louisiana Lead will integrate the input from interests of the State, and local governments, and Non-Governmental Organizations (NGOs) for coordination on developing project guidance/addressing issue resolution. The PMT will provide direction to the Project Delivery Team.

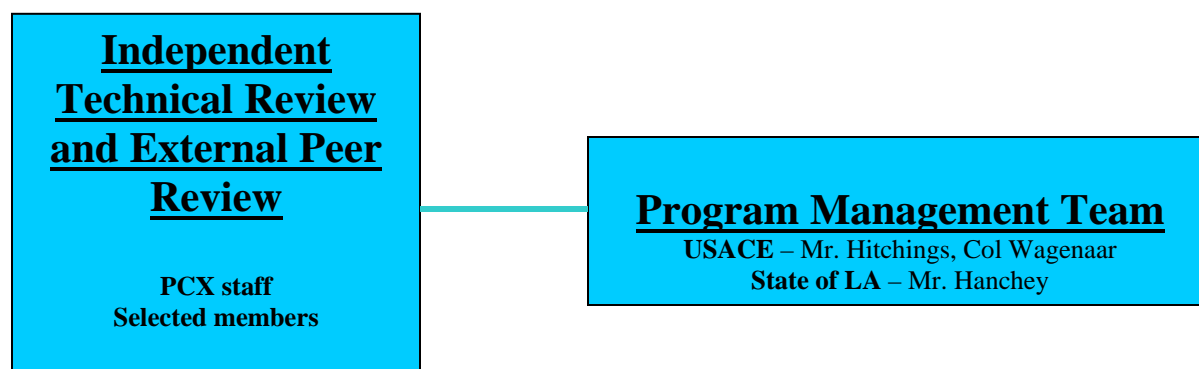


Figure 5. Program Management Team.

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(3) Tactical Level. The role of the Project Delivery Team, shown in Figure 6 at the Tactical Level is to execute the project consistent with policies and priorities. CEMVN-DE will be responsible for project execution but will employ team members from across the country both inside and outside of the Corps of Engineers and selected international expertise to accomplish the project mission.

The Project Delivery Team includes a number of team leads, advisors and managers to ensure technical quality, legal sufficiency, public and agency involvement and fiscal accountability. The overall Project Delivery Team is structured to engage and integrate all Corps and State management activities in development and execution of the projects. A collection of the National and International top researchers, engineers, managers, and policy experts will be identified and embedded with the Project Delivery Team to ensure daily technical oversight and leadership of the team's efforts.

A Project Manager (PM), Deputy PM and Team Leaders (TL) will form and guide component groups on progress management and problem resolution of tasks and related product development. The State of Louisiana will identify their counterparts to the Corps PMs and TLs for the purpose of day-to-day consultation and coordination of project planning and execution. The State personnel will coordinate with the other involved State agencies and organizations to ensure full communication. The PM will have overall purview on project development leadership, management, planning, and execution and will guide progress through TLs. The PM will regularly report to the Program Management Team on project progress and for guidance on issue resolution. The PM will select team members, organize, and lead the Managers. The PM will initially select and organize the PDT in conjunction with the PMT, then coordinate with the Managers to further shape the component groups. The Project Delivery Team will be structured with three management teams including Plan Formulation, Engineering & Design, and Management Integration lead by the TLs. Also the Project Manager will support and be supported by various teams, advisors, and project management branches within CEMVN.

The TLs will be responsible for organizing and leading their assigned component groups. The TLs will apportion tasks to the groups, pursuant to the PMP, lead technical meetings, track task progress, manage schedule and cost of tasks, conduct QA/QC of task products, identify and resolve task problems/issues, regularly update task progress to the PM, and provide task products to the PM for integration.

Considering the scope and complexity of this project, we will leverage the concept of having co-TLs at MVN and ERDC and from Planning Centers of Expertise. The MVN TLs will address task needs at the practitioner level (i.e., acquiring traditional project development data/information, making traditional assumptions, and applying known methods). The ERDC TLs will address R&D level needs of tasks (i.e., acquiring non-traditional project development data/information, making non-traditional assumptions, conducting research of unknowns, developing new methods for practitioner use, and conducting tasks of significant complexity). ERDC TLs will also in many cases integrate external experts to perform specific tasks, reaching these entities using ERDC R&D contract mechanisms such as Board Agency Announcements (BAAs) and Cooperative Research and Development Agreements (CRADAs). In other cases,

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MVN TLs will integrate external experts, where there are suitable contract mechanisms in place. The MVN and ERDC TLs will be responsible in conducting close coordination between each other for ensuring seamless integration of work between elements to complete tasks. Embedded experts from across the country will provide further collaborative input into component technical areas offering continuous incorporation of the highest level of design expertise in the execution of project work.

The Management Integration Team (MIT) will be led by the Deputy PM to produce status reports and presentations for PM use in briefings, regularly track overall study progress, conduct study budgeting and funds management, build and manage a study website, manage Public Affairs communiqué, quality assurance, manage procurement as well as integrate study products and compose the PTR. This team will leverage resources through use of contracting capabilities for support roles on the team. This emphasis will enable Corps professionals and other team members to concentrate on work execution and quality while maintaining a high level interactive communication with leadership and State partners.

The Plan Formulation Team (PFT) will be responsible for developing the formulation process, ensuring environmental compliance, inclusion of innovative solutions, and achieving public consensus on the process and alternative plans. The team includes local representatives from all of the coastal parishes, each levee board, and coastal management and restoration professionals from inside and outside of government. Staff from the North Atlantic Division's Planning Center of Expertise for Hurricane and Storm Damage Reduction will be associated with the team as embedded technical managers and reviewers.

The Engineering & Design Team (EDT) will be responsible for technical engineering quality and management. Their objective is to determine the optimum solutions, which should be considered for implementation. They will coordinate with a variety of technical resource providers to produce quality designs and cost estimates that consider risk and uncertainty.

The Project Management Branches in PPPMD will work in concert with the PMT Project Manager to ensure integration of South Louisiana Hurricane Protection project development with other active CEMVN studies and projects. This will include branch chiefs participating in developing strategies for execution of work, advising their assigned Project Managers and PDTs on how their studies and projects are to be integrated with Hurricane Protection studies, assuring program and technical information flow between respective PDTs, and sharing resources to ensure efficient execution. Assistant Division Chiefs in CEMVN will work as a team with the PM to ensure integration of studies and projects with South Louisiana Hurricane Protection Study, provide technical and other resources in a timely manner, and advice on management and technical issues.

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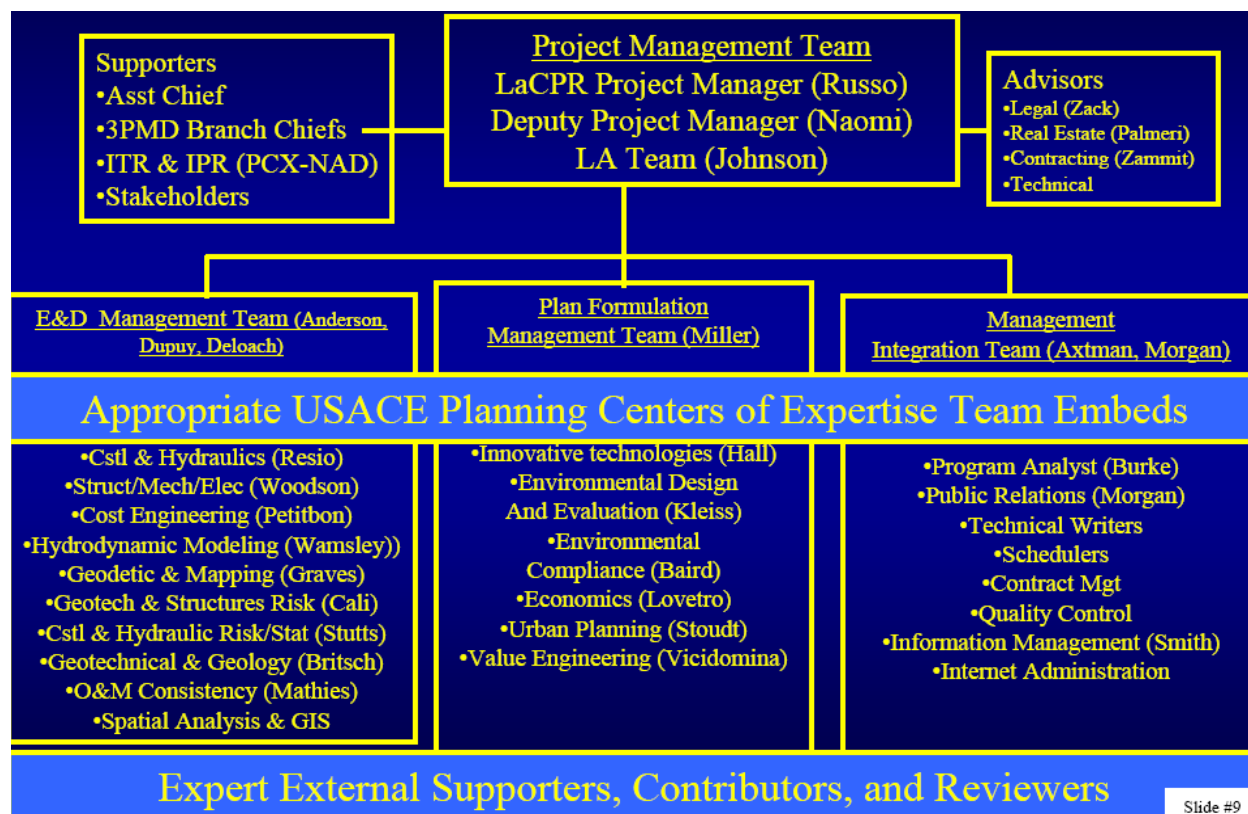


Figure 6. Project Delivery Team.

(A) Project Delivery Team. PDT members will be selected from among the best talents in science and engineering, from within and outside the government, nationally and abroad. Component groups within the team will be assigned tasks and related products for completion. PDT members will receive and follow general guidance from the PM and technical guidance from the TLs. PDT member expectations will be specific. These expectations are important to establish and articulate in advance of work commencement, especially given the diverse composition of teams. The PM will review these expectations with TLs at the beginning of the study. The TLs will review these expectations with PDT members upon commencement of project tasks. The PM, TLs, and PDT members will sign an agreement to follow these expectations prior to study involvement as a commitment to excellence in study advancement.

PDT expectations are summarized in the following:

- Technical Competence
  - Use sound science and engineering principles, practices, and judgment
  - Maintain high quality in work; document and memorialize results
  - Explore and use current approaches to accomplish tasks; develop new, original, high quality methods and technologies where useful and beneficial to accomplish work
  - Collaborate with colleagues to conceive and formulate work approaches, calibrate models, and verify results

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- Be prepared to present technical work on the study to the scientific and engineering community, developing papers / presentations for Independent Technical Review and Peer Review. Exploit opportunities to present results to colleagues working on the study. Accept criticisms with grace and continually strive for improving methodologies and products.
- Planning / Timeliness
  - Consistently follow the policies and guidelines issued by the organizational leadership
  - Leverage time management principles in short- and long-term work planning and execution to work more effectively, efficiently, and productively
  - Use project management principles to plan and execute work
  - If conditions change relative to plans, or outcomes during project execution are unexpected, coordinate early and often with managers and team members for course correction
  - Develop/apply the ability to handle multiple tasks and regularly prioritize actions according to need as they change
- Communication
  - Be an honest, ethical, and courteous broker
  - Maintain high quality in written work
  - Develop/apply effective presentation/oral communication techniques
  - Maintain thorough correspondence and project records
  - Keep organizational leadership and team members informed on project work frequently throughout process
- Teamwork / Leadership
  - Recognize and use the teambuilding principles of “form, storm, norm, and perform”
  - Build and maintain strong and strategic working relationships
  - Strive for consensus during decision making in the team setting
  - Help others when they need it and you are able to assist
  - When assigned a leadership role, build strong teams and guide them in the right direction, motivate them, coach them, and foster a suitable working environment to ensure their effectiveness, efficiency, and productivity
- Task / Product Development
  - Know the study authority and assembled organization’s capabilities for properly addressing the PMP requirements
  - Maintain awareness of the study’s problems and needs
  - Seek collaboration opportunities for synergy between teams and tasks
  - Build and maintain strong and positive relations with study’s customer (i.e., public and higher authority) / partners (ex., collaborating agencies on study) / stakeholders (ex., resource agencies)
  - Give more than you promise and don’t promise more than you can give
  - Maintain for confidentiality study data, information, programs, and products that are in the development phase and not ready for public release

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- Personal Initiative
  - Recognize personal strengths and weaknesses for study work and team interaction
  - Strive to work with others interdependently across team lines where needed
  - Stay apprised of what is going on in the overall study process
- Customer Care
  - Regularly update the PM, TLs, and team members to report progress, identify problems/needs, and share information of common interest
  - Solicit feedback from customers, partners, and stakeholders on work performance/satisfaction and continually seek improvement
  - Follow up when things go wrong and promptly take corrective action

(B) Independent Technical Review (ITR) Panel. An ITR Panel has been assembled from among experts within USACE in planning, science, and engineering, for detailed check of planning and technical work and products completed by the PDT for sufficiency of assumptions, methodology applied, as well as to detect any errors and omissions. The USACE Planning Centers of Expertise developed the ITR Panel with main responsibility residing out of the North Atlantic Division's Hurricane and Storm Damage Prevention group. It is critical to product quality that ITR be an integrated and ongoing part of the project development process and not an endgame review of the team's work. Members of the ITR are shown in Figure 7.

The system of Planning Centers of Expertise identified within the Corps of Engineers provides a ready resource for engaging the technical reviewers and members of the teams and their component products. The U.S. Army Corps of Engineers National Nonstructural/Flood Proofing Committee (NFPC) is an excellent support element for Nonstructural Flood Damage Reduction. The NFPC has the capability to provide assistance to truly innovative planning, including nonstructural flood damage reduction, flood plain management, and ecosystem restoration. The NFPC can provide support for at least three of the five key business functions: flood damage reduction, hurricane and storm damage prevention, and ecosystem restoration. Of particular note and opportunity is the parallel of the NFPC capabilities with the direction of Congress in developing the Category 5 technical reports. The team intends to take full advantage of these capabilities during the course of the preparation of the Reports to Congress.

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**Figure 7. Independent Technical Reviewers and PDT Co-Leads by Discipline.**

<b>DISCIPLINE</b>	<b>TECHNICAL LEAD (#1)</b>	<b>CO-TECHNICAL LEAD (#2)</b>	<b>CO-TECHNICAL LEAD (#3)</b>	<b>PDT CO- LEADS</b>
Project Management	<i>J. Bailey Smith, NAP</i>	<i>Tom Pfeifer, NAN</i>	<i>Jeff Gebert, NAP</i>	<i>Edmond Russo, ERDC AL Naomi, MVN Greg Miller, MVN Tim Axtman, MVN Carl Anderson, MVN</i>
HSDP CX	Joe Vietri, NAD	<i>Larry Cocchieri, NAD</i>	<i>Pete Blum, NAD</i>	N/A
Engineering Management	<i>Gus Rambo, NAP</i>	Sheila Rice McDonnell, NAN	Jim Moore, NAB	Tim Ruppert, MVN Pam Deloach, MVN
Coastal and Hydraulic Design	<i>Randy Wise, NAP, RTS</i>	David Yang, NAN	John Winkleman, NAE	Van Stutts, MVN Kevin Knuuti, ERDC
Hydrodynamic Modeling	<i>Randy Wise, NAP, RTS</i>	John McCormick, SAW	John Winkleman, NAE	Van Stutts, MVN Ty Wamsley, ERDC
Coastal and Hydraulics Risk /Statistics	<i>David Goldman, ERDC, CRREL</i>	Mike Wutkowski, SAW		Van Stutts, MVN Don Resio, ERDC
Structural Design	<i>Cameron Chasten, NAP, SP</i>	X. Mike Chen, NAN	John Wong, NAN	Don Jolisant, MVN Stan Woodson, ERDC
Electrical Design	Tom Sessa, NAN	Al Lin, NAN	Benjamin B. Mangaser, NAP	

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DISCIPLINE	TECHNICAL LEAD (#1)	CO-TECHNICAL LEAD (#2)	CO-TECHNICAL LEAD (#3)	PDT CO- LEADS
Mechanical Design	Matt Hinson, NAO, RTS			
Civil Engineering	<i>Cameron Chasten, NAP</i>	Barry Cortright, NAB		
Deep Draft Navigation	<i>Frank Santangelo, NAN, RTS</i>	<i>Robert Patev, NAE, RTS, IPET</i>		
Interior Drainage, Pump Stations	<i>Larry Holland, NAO</i>	Peter Koch, NAN		Van Stutts, MVN Kevin Knuuti, ERDC
Hydrology	Peter Koch, NAN	<i>Glendon Stevens, NAP</i>		Van Stutts, MVN Kevin Knuuti, ERDC
Cost Engineering	Jose Alvarez, NAP	John Chew, NAN	Anthony V. Colicchio, NAD	John Petitbon, MVN
Geodesy and Topography	Joe Scolari, NAP			Mark Huber, MVN Mark Graves, ERDC
Geology and Geotechnical	<i>Ben Baker, NAN, RTS</i>	Chuck Mendrop, MVK	Ben Gompers, NAU	Pete Cali, MVN Del Britsch, MVN Joe Dunbar, ERDC
Geotechnical and Structures Risk/ Statistics	Chuck Mendrop, MVK	<i>Ben Baker, NAN, RTS</i>	Ben Gompers, NAU	Pete Cali, MVN Don Joissant, MVN Joe Koester, ERDC
Innovative/ Science and Engineering Technologies	Larry Buss, CENWO	Dave Rackmales, NAN		Buddy Clairain, ERDC Robert Hall, ERDC



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DISCIPLINE	TECHNICAL LEAD (#1)	CO-TECHNICAL LEAD (#2)	CO-TECHNICAL LEAD (#3)	PDT CO- LEADS
Spatial Analysis and GIS	Matt Walsh, NAE, RTS	Stephen McDevitt, NAN		Mark Graves, ERDC
Environmental Compliance	<i>Bob Kurtz, NAN, RTS</i>	Beth Brandreth, NAP, RTS	Cathy Rogers, NAE, RTS	Bruce Baird, MVN
Cultural Resources	<i>Chris Ricciardi, NAN</i>	Nancy Brighton, NAN	Jim Barnes, MVS	Ed Lyons, MVN
Biological Resources	<i>William Brostoff, SPN</i>	<i>Mark Burlas, NAN</i>	Kevin Luebke, NAB	Sean Mickal, MVN
HTRW	Richard Dabal, NAN	William Harris, NAP		
Environmental Design and Evaluation	Marc Masnor, SWT	Steve Nolen, SWT	William Shadel, NAN	Bruce Baird, MVN Barb Kleiss, ERDC
Economics	<i>Kevin Knight, SPN</i>	Ed O'Leary, NAE, RTS	<i>Richard Ring, NAD</i>	Kevin Lovetro, MVN
Plan Formulation	<i>Dick Heidebrecht, NAE, RTS</i>	<i>Thomas E. Pfeifer, NAN, SP</i>	Larry Buss, CENWO, SP, Non-Struct. Plan Form.	Tim Axtman, MVN Greg Miller, MVN
Real Estate	<i>Heather Sachs, NAB</i>	Randy Williams, NAN, SP		
O&M Consistency	Tony DePasquale, NAP			

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DISCIPLINE	TECHNICAL LEAD (#1)	CO-TECHNICAL LEAD (#2)	CO-TECHNICAL LEAD (#3)	PDT CO- LEADS
Information Management, Access, and GIS	Colleen Rourke, NAP	Stephen McDevitt, NAN		Ralph Scheid, MVN Clint Padgett, USGS Harold Smith, ERDC Mark Graves, ERDC
Contracting	Jim Moore, NAB		Not a factor in the 6-mo PTR	Charlie Zammit, MVN
Constructability/ Value Engineering	Not a factor in the 6-mo PTR			Steve Conravey, MVN Frank Vicidomina, MVN
P2/Accounting	Janet Cockroft, NAP	Norman Blumenstein, NAN	Sandra Montagne, NAN	
<i>Italics indicate participated in New Orleans/Mississippi Site visit 20-23 March 2006</i>				

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(C) External Peer Review. Peer review is an important part of the report development and completion process that ensures team products undergo an outside, unbiased review for technical sufficiency and soundness of approach. The review process for this report is being conducted in a collaborative and constructive framework that involves access and interaction with team members. Incorporating peer reviewers into team decisions establishes a more informed decision making process and augments the technical standards employed by the team for assessing and designing a Category 5 protection plan for South Louisiana. The Planning Centers of Expertise were responsible for assembling the external peer review team. Formation of the Peer Review Panel was accomplished after identification of appropriate necessary technical disciplines and broad solicitation of potential nominees for each discipline. Potential candidates were screened for availability, interests, and technical experience. A panel of approximately 10 people was to be selected. It is anticipated that there will be approximately four meetings scheduled at strategic milestones during development of the reports to address prior progress and critical planned activities. These milestones for the review team would include PMP completion, screening of plan formulation measures, draft report, and final report. Participants would be paid an honorarium for each meeting and all travel and per diem costs would be covered.

## **7. Outreach and Communications Plan.**

A full Communications Plan has been developed for the project (see Appendix B). Report results that would be enacted have potential major implications for South Louisiana developments and coastal resources, as well as that of the Gulf of Mexico region. Public interest in the project is expected to be high, and continual communication is essential since the results will be far reaching. The USACE MVN will implement an outreach effort throughout the project development process to: (1) raise awareness of problems and needs being addressed, and (2) keep the public informed of project progress, and (3) establish interactive public input and feedback opportunities.

Outreach will be conducted via the PEIS process, as well as in separate, additional public involvement venues. The Corps will conduct scoping under a PEIS, including a series of public meetings within the region, concurrent with but separate from the PTR development process. The Preliminary Technical Report will not be dependent for completion on a completed PEIS, but will incorporate input derived from the PEIS process. The PEIS will be completed commensurate with the Final Technical Report. Outreach communications in addition to PEIS venues will involve press releases, as well as media events, to portray the project development process, identify involved parties in the project, describe target products and schedules, as well as to apprise the public on the status of work.

An important linkage for project development outreach will be consulting with the CPRA to solicit input from stakeholders on development of “locally preferred plans.” Stakeholders are shown in Figure 8. The CPRA will inventory, review, and integrate this input into a comprehensive and consistent set of information for consideration of those responsible for project development. The USACE will coordinate with CPRA on outreach events to be conducted via the PEIS process, as well as for interaction with the media.



**Figure 8. Stakeholder Groups.**

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## **8. Task Descriptions and Products.**

### **PLANNING AND PROJECT MANAGEMENT**

#### **1000 PM Gains Executive Guidance and Forms PDT:**

The PM will communicate with executive management levels to obtain a clear definition of project requirements, expectations, policies, and strategies prior to development of a PMP. Team members for the PDT are selected from within and outside USACE.

#### **1100 PM Assigns Team Leads**

The PM will work with appropriate managers to identify technical leads for the project. Technical leads will then work with their managers to identify other required team members. All assignments will be made with the understanding that this project will have priority over other responsibilities.

#### **1200 Review Legislation and Set Process With PDT**

The PM will review legislation and assess impacts on project scope and schedule. The PM will provide guidance to the PDT on actions required for compliance with legislation.

#### **1300 Identify Scope, Tasks, Products, and Activity Network With PDT**

The PM will prepare a draft PMP and coordinate it with PDT members. Adjustments to task descriptions, scopes of work, schedules and cost estimates will be made and incorporated into the final PMP.

#### **1400 Resource Tasks and Forecast Obligations and Work Schedule**

Once the PMP has been completed and approved by all appropriate offices, the PM will incorporate project schedules and costs into CEFMS and P2 to fund all required offices.

#### **1500 Compile PMP and Distribute**

The PM will compile and distribute the final PMP to all team members within USACE, the State, participating agencies, and other resource providers.

#### **1600 Form Planning Units (PUs) Based on Pre- and Post-Katrina/Rita (PPKR) and Design Storm**

Pre and post Katrina/Rita conditions along with topography, geotechnical conditions, existing flood control and interior drainage facilities, local government boundaries, and other relevant information to delineate planning units. The purpose of forming planning units is to facilitate development of logical designs that can be efficiently integrated into the existing physical and political environment.

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**1700 Formulate Design Storm (DS) Plans by Planning Unit (PU)**

Based on the results of DS simulations for each planning area, identification of areas that would be susceptible to flood damages, and evaluation of the impacts of Hurricanes Katrina and Rita, design storms will be formulated for each planning unit.

**1800 Compile DS Preliminary Technical Report and Merge With PEIS**

A preliminary technical report will be prepared documenting the process and results of formulation of the design storms by planning unit. The preliminary document will address data, assumptions, modeling methodologies, results, conclusions, and recommendations. The preliminary DS document will be formatted so that it can be incorporated into the Engineering Appendix for the FTR.

**1810 Refine DS Final Technical Report/PEIS**

The preliminary DS document will be subjected to an ITR. Comments and suggestions will be incorporated into the final document, as appropriate.

**SPATIAL ANALYSIS AND GIS**

**2000 Compile Spatial Data to Support Alternative Analyses Design**

This task will compile spatial and other data required to conduct analyses comparing engineering design alternatives. Information and data developed by the Interagency Performance Evaluation Team (IPET) will be leveraged to a maximum extent.

**2100 Spatial Analysis of Protected and Unprotected Areas From Each Design Alternative**

Results from numerical model simulations for each design alternative will be combined with spatial data to identify and characterize protected and unprotected areas in each planning unit.

**INFORMATION MANAGEMENT AND ACCESS**

**2500 Design and Establish Internal data access/management site**

Review and validate suitability of the technical architecture design of the IPET data management system for LACPR. Create a new internal secure data source on the ITL ProjectWise database for LACPR. Install taxonomy and metadata requirements on the data source. Maintain restricted secure access to the site using a single sign on capability.

**2510 Determine Taxonomy for Data Organization**

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Review the IPET and MVD taxonomy directory structures and metadata attributes with subject matter experts of the SLA CCPRP team for suitability. Adopt, modify, and/or create a new taxonomy for the SLA CCPRP data source as determined from the review.

**2520 Provide User Support, Operate, Maintain, Modify Internal Access Site**

Provide daily support to the user community through phone support, training, IT operations help and modifications of the system as required. Provide daily management and IT hardware and software support for continuous operations.

**2600 Design and Establish Public Information Access Site**

Develop a public web site to distribute data and information to the general public as it is released from the study team. Review with subject matter experts the CHL web site as a model for this public site. Develop a software tool to interface with ProjectWise to access data released to the public to eliminate duplicate data sources.

**2610 Define QA/QC and Data Distribution Protocols**

Develop QA/QC procedures for all data placed on the system. Serve as the data manager for all data stored on either internal or external data repository. Develop data distribution protocols and approval process for posting and to address FOIA requests. Develop and maintain a data requirements matrix to facilitate effective use, eliminate redundancies, and facilitate storage of new and old data required by the planning teams.

**2620 Provide User Support, Operate, Maintain, Modify Public Access Site**

Provide continuous IT and technical support for the public access site as needed.

**2630 Draft/Coordinate External Data Communications Plan for Public Site**

Develop a draft external data communications plan, associated protocols, and coordinate the plans with the SLA CCPRP team.

**2700 Configure and Establish IPET Data Sharing Capability**

Develop the capability to access data stored in the IPET data repository by the SLA CCPRP data repository. Develop software tool to access data and metadata from the IPET data repository.

**2800 Configure and Establish Data Integration With GIS Analysis Sub-Task**

Develop data integration and metadata to integrate the GIS data source with the SLA CCPRP data repository and the public web site.

**2900 Acquire Dedicated Storage/Hardware/Software**

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Purchase hardware to provide continuous backup and online storage of data for the public and internal data repositories. Purchase software to facilitate development of internal repository and public website.

*HYDROLOGY AND HYDRAULICS*

**3000 Define Current and Future DS Conditions and Paths of South Louisiana**

Current design storm standards will be compiled for all Federal and local coastal storm protection facilities in the study area. A suite of design storms (DSs) will also be developed that could reasonably be expected to impact South Louisiana. The suite of design storms will include the following “Category 5” storms: (1) the Maximum Possible Hurricane (2) the Probable Maximum Hurricane and (3) a “Katrina-like” hurricane. A design storm will be established for each planning unit. The design storms will represent worst case scenarios for hurricane surge and waves for storms that could be reasonably expected in each planning unit. The DSs will be based on critical combinations of hurricane paths, hurricane speeds, wind speeds, and wind directions for the specific physical characteristics in each planning unit. The Advanced Circulation (ADCIRC) model will be utilized in this analysis.

**3100 Determine Preliminary DS Water Surface Elevations (WSELs) for PPKR Conditions**

A series of ADCIRC simulations will be run for each planning unit to determine which combinations of events produce the critical water surface elevations (WSELs) for Pre and Post Katrina/Rita conditions. Additionally, high water mark data will be assembled. The quality of each high water mark will be assessed for use in model calibrations. Each high water mark will be rated in terms of quality/uncertainty, and wave and water levels processes reflected in each high water mark. Measured water level data from USGS, NOAA, USACE, and other sources will also be evaluated. This information will be utilized to establish preliminary DS WSELs for each planning unit.

**3110 Determine Refined DS WSELs for PPKR Conditions**

Following development and review of preliminary design storm water surface elevations, a more rigorous statistical comparison of modeling results with recorded data will be performed for each planning unit. If necessary refinements to the DS WSELs will be made.

**3120 Determine Responses of Structures to DS WSEL Based on Preliminary Structure Placements**

Once preliminary structure placements (levees, water control structures, canals, pump stations, etc) have been identified, an analysis will be performed to determine the response of the structures to a DS WSEL.



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**3130 Check Refined Structures for Sufficiency against DS WSELs; Address Unintended Consequences (UC)**

After structure designs have been refined, they will be reviewed to determine their susceptibility to overtopping caused by a DS WSEL. Additionally, this effort will identify and evaluate any unintended environmental, social, or engineering consequences of the structures during a DS.

**3150 Determine Preliminary DS Hydrodynamic Forces (HFs) for PPKR Conditions**

This task will produce time series of local hydrodynamic conditions (including static and dynamic forces, dynamic pressure distributions along levee surfaces, and time-varying overtopping rates) contributing to levee failures. Hydrodynamic estimates along with an understanding of their potential importance to levee failures inside canals as well as in other areas will be generated.

**3160 Determine Refined DS HFs for PPKR Conditions**

After review of the preliminary DS hydrodynamic force estimates for PPKR conditions, refinements will be made as appropriate.

**3170 Determine Preliminary DS Hydrodynamic Forces and Evaluate Effects on Preliminary Structure Placements**

Initial investigations will be conducted to isolate the most probable structural failure modes and their possible relationships to hydrodynamic forcing. Locations of failure and overtopping sites will first be examined to determine the degree of commonality and/or dissimilarity existing among these sites (i.e. relative positions of failures along canals, levee elevations at failure points, local design variations, local canal characteristics, proximity to bridges, foundation materials, etc.). Site visits, reviews of available records, and analytical models will be used to form hypotheses for possible failure scenarios.

Additionally, modeling of local wave and water level characteristics in the vicinity of potential levee failure points will be performed. Local-scale numerical models will develop wave characteristics in the vicinity of levees. This scale will likely use a very fine scale coupled circulation model and wave model, including complex and highly nonlinear hydrodynamic effects via robust hydrodynamic models such as Boussinesq wave and current models and Navier Stokes models. A small-scale physical model will also be used to investigate local scale phenomena.

Wave overtopping is potentially an important factor related to levee failure. Normally, wave overtopping is computed from empirical data from physical models or prototype measurements. However, overtopping from waves in a canal and/or in hurricane driven conditions has not been well quantified. A physical model may be required to determine the overtopping rates for realistic local wave and surge conditions in the canal. The overtopping will feed back to modify local wave fields within the canal. Studies of local overtopping will

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most likely be conducted using existing data and numerical Navier Stokes methods. The resulting overtopping rates will provide valuable information relative to the role of overtopping to levee failure.

### **3180 Check Sufficiency of Refined Structures against DS HFs and Address UC**

After the assessment of the preliminary structure performance has been completed and areas of concern have been addressed, the refined structure sufficiency will be re-evaluated for DS HFs.

### **3200 Model/Map PPKR HGM and Constituent Transport**

Using the hydrogeomorphic approach (HGM) for assessing wetland impacts, maps will be developed to assess the extent and magnitude of potential impacts (positive or negative) to existing wetlands.

### **3300 Optimizing the Reliability of Multiple Lines of Defense for Providing Increased Hurricane Protection in South Louisiana**

A model for evaluating the effectiveness and optimizing use of geomorphological features to complement traditional flood protection structures (levees and floodwalls) in providing increased hurricane protection will be developed. This model would fill a need to parametrically couple hydrodynamic finite element numerical surge and wave modeling results with that of engineering systems analysis and design. The objectives include: (1) derive a predictive function that characterizes system reliability of geomorphological features functioning to diminish and delay the surge hydrograph and wave heights, synergistically with traditional flood protection structures resisting overtopping, assuming varying levels of maintenance of each of these features after construction (i.e., excellent, satisfactory, poor), (2) derive a relationship between the reliability function and the required FS of the system against overtopping, and (3) implement these equations as objective functions in a computerized linear programming approach to maximize extent of geomorphological features placed and/or replaced, and minimize the required elevation of levees and floodwalls against overtopping.

A parametric analysis would be conducted based on the results of several hydrodynamic surge and wave numerical modeling runs, where there would be variations of the digital elevation model to reflect addition of geomorphological features. This would result in a family of performance curves for variations of the combined geomorphological – traditional flood control structure system. Commensurate to the placed / replaced geomorphological features analyzed, an ecological habitat value would be assessed for respective scenarios. Inputs to the linear programming model would be parametric input derived from hydrodynamic surge and wave modeling, as well as ecological value trends. The output of the linear programming model would be quantification of maximized ecological habitat value and minimized flood control structure elevation required, portrayed commensurate to risks and recommendation of required factors of safety to meet the needs of no overtopping, for reliabilities at excellent, satisfactory, and poor system maintenance.

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The new model must be calibrated and verified to evaluate and optimize alternatives formulated during the project development process. For the set of design alternatives generated by the team for evaluation, systematically optimize them to minimize construction requirements, by alternative and reach, considering the quantity, quality, and spatial distribution of required resources. Once developed, the tool would be technologically transferable for adaptation in addressing similar multi-objective water resources development needs elsewhere.

## **SURVEYING AND MAPPING**

### **4000 Build PPKR Datum – Corrected Digital Elevation Model (DEM) Terrain and Infrastructure**

To ensure that the levee heights have remained relevant to sea level rise and local land subsidence in the study area, all elevations should be measured relative to the latest Geodetic Vertical Datum as determined by an ongoing studies being conducted by CEMVN and the NOAA. This should include sea levels, lake levels, river levels, projected protection levels, and the top of the levees and floodwalls. NOAA is progressing on an effort to determine net subsidence in the entire Gulf Coast region and dramatic changes are being reported. The entire region is so dynamic that NOAA is no longer going to rely on local bench marks, but instead is using GPS surveying techniques to measure elevations relative to stable areas that are hundreds of miles away. NOAA, in conjunction with the LSU Louisiana Spatial Reference Center, has also developed a new vertical reference framework from which all measured elevations will have time stamps on them so the values could be corrected on some regular interval.

The initial focus of this study will be to establish a consistent, vertical reference framework model. This geodetic framework--currently (NAVD88-2004.65)--will allow long-term monitoring of absolute flood/hurricane protection elevations relative to the local water surface reference datum, e.g., mean sea level, river low water reference planes, etc. Controlling elevations on floodwalls, levees, pump stations, and bridges through the SE Louisiana region will be surveyed relative to this framework. The framework will additionally provide a consistent reference system for numerical and physical model studies performed in the region.

Based on the geodetic datum, existing data will be supplemented as needed to develop a digital elevation model for the study area. This DEM will include terrain and infrastructure and will serve as the basis for planning and design in this study.

## **GEOLOGY AND GEOTECHNICAL**

### **5000 Map Current and Future Geology and Quantify Geotechnical Performance**

The initial step in this task will be to inventory all available geologic and geotechnical data relevant to the study area. Applicable existing data will then be compiled. The adequacy of

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the existing data will be evaluated and additional data collection needs will be identified. The additional data will be collected and analyzed. It will then be integrated into a spatial model, along with the existing data.

The geologic and geotechnical data will be assessed to characterize the geotechnical design considerations required for designing project structures in each planning unit.

## ENGINEERING AND DESIGN

### **6000 Investigate IT; Conduct Engineering and Design, Construction and O&M Concept Planning**

This task will encompass all engineering activities required to develop and evaluate alternatives and prepare designs for the recommended plans in the Final Technical Report. Operations, maintenance, repair, rehabilitation, and replacement (OMRR&R) requirements will also be addressed.

### **6010 Form Engineering Risk and Uncertainty Models in Perspective of Factor of Safety (FS)**

#### *For Engineering and Design*

An assessment will be made to identify the design parameters that, if they are not accurately identified, would potentially impact the factor of safety for the structures. For each of the identified parameters, modeling, data collection, and analysis will be performed to develop probability functions.

#### *For Coastal and Hydraulics*

- **Initial Evaluation of Risk Methodologies**

This phase will proceed with assessments of the four major approaches for estimation of surges and waves and then synthesize the results into a finalized methodology for hurricane risk assessment in Southern Louisiana.

#### *a) Estimation of Maximum Possible Hurricane Characteristics*

This team will consist of meteorological experts within NOAA (Mark Powell, Will Schaffer, and Jack Bevan) along with Oceanweather (Vince Cardone and Andy Cox), ERDC (Don Resio) and Leon Borgman. Products from this team include estimates of the extreme hurricane that could threaten Southern Louisiana and the development of a preliminary set of hurricane parameters for hurricanes from 1900 to the present.

#### *b) Monte Carlo Simulation Method*

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This team will consist of Peter Vickery (ARA), Daniele Veneziano (MIT), Nobu Kobayashi (U. of Delaware), Leon Borgman, Don Resio (ERDC). Products from this effort will be developed in stages including – 10 days after contract initiation, preliminary assessment of historical data for assessing model uncertainty; - 3 months after contract initiation, development of rough time series of water levels and wave heights; - and 3 months after contract initiation, development of preliminary wind fields for ADCIRC-wave modeling.

c) **Modified Joint Probability Method**

This team will consist of COE members (Resio, Chapman, Irish and Melby), Surfbreak Engineering (Dally), Nobu Kobayashi (U. of Delaware) and Leon Borgman. The products from this will include – 2 months after initiation, a multivariate probability estimate for all hurricane parameters affecting coastal surges and waves along with appropriate extrapolation functions for regions beyond the historical sample, - 3 months after initiation, ADCIRC runs on a simplified coast to determine the relationship between the multivariate probability space and the surge Cumulative Distribution Function (CDF); 5 months after initiation, complete statistical estimates appropriate for use in ADCIRC risk-assessment production runs and preliminary modified Joint Probability Method results for New Orleans areas.

d) **Modified Empirical Simulation Technique**

This team will consist of COE members (Boc, Melby, Resio, and Irish), Borgman, and Dally. The products will include – 4 weeks after initiation, a revised plotting estimation methodology for plotting historical storms in the EST; - 5 months after initiation, preliminary modified EST results for New Orleans area.

e) **Synthesis of Results and Specification of Optimal Methodology for Risk Assessment**

This team will consist of the principals from the previous four tasks, ERDC (Resio), Vickery (ARA), Powell (NOAA), Cardone (Oceanweather), Veneziano (MIT) and Borgman. This team will synthesize all of the efforts and determine an optimal approach to evaluating storm probabilities for hurricane risks in Southern Louisiana. All work will be complete within 6 months of contract initiation.

- **Coordination of Statistical Assessments with Modeling and Design Groups**

This phase of the work will involve working with the modeling group and the design group to resolve issues on risk for all new design concepts and development of statistical estimators as required.

## **6020 Characterize Risk and Uncertainty in Perspective of FSs**

### *For Engineering and Design*

Based on the probability functions established in task 6010 for critical parameters, a risk and uncertainty analysis will be performed to better assess the adequacy of the factor of safety.

### *For Coastal and Hydraulics*

- **Application of Selected Methodology to Hurricane Risk Assessment for Southern Louisiana**

In this phase of the work, most of the resources will go toward improved estimation of historical and statistical hurricane characteristics. The primary products from Phase 2 will be an improved estimate of the maximum possible storm characteristics, improved development of parametric characteristics for all historical hurricanes (> CAT 1) after 1900, development of improved methods for characterizing uncertainty, and development of final storm climatology and risk methodology for Southern Louisiana (including maximum storm constraints). The exact details will depend on the outcome of Phase 1. All products from Phase 2 will be completed by January 1, 2007.

- **Coordination of Statistical Assessments with Modeling and Design Groups**

This phase of the work will involve working with the modeling group and the design group to resolve issues on risk for all new design concepts and development of statistical estimators as required.

## **6100 Conduct preliminary E&D for DS Hurricane Protection Structures**

Based on the establishment of preliminary Design Storm water surface elevations and geotechnical data analysis preliminary designs for alternative plans will be developed. Preliminary designs will then be developed for each of the alternative plans. Alternative plans will be composed of levees, pump stations, water control structures, canals, etc. The preliminary plan designs will then be evaluated for their susceptibility to failure due to a DS. Potential problems will be identified.

## **6200 Conduct Refined E&D for DS**

Preliminary designs will be refined to correct deficiencies identified during the simulation of conditions associated with exposure to the DS. The refined plans will be developed at a level of detail comparable to a feasibility study. The refined plans will be developed as part of the Final Technical Report.

## **6600 Compile Engineering Appendix**

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An Engineering Appendix will be prepared for the Final Technical Report. It will identify and describe the data that was collected and utilized, project assumptions, design procedures, safety factors, hydrologic and hydraulic models and their applications, and other relevant engineering information.

## **COST ENGINEERING**

### **7000 Conduct Preliminary Cost Engineering**

Cost estimates will be developed for preliminary plans for each alternative in each planning unit.

### **7100 Conduct Refined Cost Engineering by PU**

Following refinement of the designs in each planning unit, a refined cost estimate shall be prepared at a level of detail comparable to a feasibility study.

## **ENVIRONMENTAL**

### **8000 Initiate Programmatic Environmental Impact Statement (PEIS)**

This task will include all activities required to initiate preparation of a programmatic environmental impact statement (PEIS).

### **8010 Prepare Purpose and Need For Action**

A description of the project purpose and needs will be developed for inclusion in the notice of intent to prepare a PEIS.

### **8100 PEIS Notice of Intent**

A notice of intent to prepare a PEIS will be prepared and published in the Federal Register. Notices will also be mailed to members of the public and Federal, State, and local agencies. The notice of intent will include an announcement of the time and location of planned scoping meetings.

### **8110 Public Scoping (Concurrent Existing Condition Data Gathering)**

A scoping process will be conducted to identify a comprehensive set of concerns, issues, or needs related to the project. Scoping meeting will be conducted as part of this process. As part of this process, development of a set of evaluation criteria will be initiated. The evaluation criteria will address benefits and adverse impacts. Although the evaluation criteria will be updated and revised as the study progresses, they will provide an important guide to plan formulation, evaluation, and design. The evaluation criteria will also establish a clear definition of goals and objectives for the project.

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Concurrent with the scoping process, an inventory will be conducted to characterize the existing environmental conditions by planning unit. This information will also be used in the establishment of evaluation criteria.

#### **8200 Map PPKR Habitat and Historical Landscape Change**

Maps will be prepared for each planning unit delineating existing habitat types. An analysis will be performed to establish historical trends and landscape changes that have occurred.

#### **8300 Develop Alternatives**

In compliance with the requirements of NEPA, alternative plans will be developed and evaluated for each planning unit. However, since this is not a feasibility study and development and evaluation of a comprehensive set of alternatives is not required, the number of alternatives will be limited. One of the alternatives will be the “no action” plan – an assessment of future conditions if no project is implemented.

#### **8350 Solicit and Document Public Comments on Preliminary Plans**

Preliminary plans for each planning unit will be described in lay person’s terms and distributed for review by the public, Federal, State, and local agencies. Public meetings and/or workshops may be conducted as appropriate. All comments will be recorded and addressed.

#### **8390 Screen Alternatives**

Subjective evaluations of alternatives will be performed to eliminate all but two, the no action plan and the tentatively selected plan for each planning unit. More detailed evaluations will be performed only if necessary to demonstrate the superiority of one “action” plan over the others.

#### **8400 Impact Analysis on Final Plans (Positive and Negative) by PU**

When the selected plans have been identified for the planning units, an impact assessment will be performed. It will address the positive and negative impacts of the plans using the evaluation criteria and other mandated Federal and State procedures.

#### **8500 Prepare Report/PDPEIS**

A preliminary draft Programmatic Environmental Impact Statement (PDPEIS) will be prepared. It will contain all components required in an EIS, including descriptions of the project purpose and needs, results of scoping, descriptions of the alternatives, impact assessments, and compliance with Federal regulations. The preliminary draft PEIS will be developed for review by the PDT and will undergo a separate ITR.



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**8600 Prepare Report (DPEIS)**

Based on comments received during the review of the PDPEIS, the document will be revised and prepared for distribution to the public for a 45-day review period. When the document has been prepared, a notice of availability will be published in the Federal Register.

**8650 Solicit and Document Public Comments on Refined Plans**

In addition to the notice of availability in the Federal Register, mail outs will be sent to the public and Federal, State, and local agencies summarizing the study results and soliciting comments on the refined plans. Public workshops/meetings will be conducted to provide additional opportunities for input. All comments received during this process will be recorded and responses will be prepared for inclusion in the final document.

**8700 Prepare Report/FEIS**

The DPEIS will be revised as appropriate based on comments received during the public review period. Each comment received will be addressed by either modifying the document, providing a clarification, or by explaining why no action is being taken. A notice of availability for the FEIS will be published in the Federal Register initiating a final 30-day public review period.

**8800 Draft Record of Decision**

If no substantive modifications to the PEIS are required after the final public review period, a record of decision will be prepared in coordination with the USACEs Vertical Team.

**URBAN PLANNING**

**9000 Map PPKR Urban Planning Development**

An important consideration in the development of protection plans and impact assessment is the redevelopment plans of the Parishes and municipalities. For each planning unit, the development plans will be identified and evaluated.

**9100 Determine Urban Planning Impacts**

Although this study will not attempt to identify the NED plan, it is important to understand the potential impacts on existing and planned development when developing designs. An inventory will be compiled of existing structures and values to assist in risk assessment by planning unit. The purpose this activity will be to insure compatibility with urban community plans including transportation, recreation, water supply, sanitary, etc.

**9300 Portray Alternatives in Terms of Risk and Cost in Context of Urban Redevelopment Plans for PUs at DS Protection**

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The economic values of areas protected in each planning unit will be estimated using urban planning results of task 9000 and the structure values compiled in task 9100. This information will be used during the development of designs.

## **ECONOMICS**

### **10000 Determine General Building Stock in Study Area**

With the use of HAZUS, a computer program developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences, the building count along with the depreciated and replacement value for residential and non-residential properties by census block for 33 structure categories will be developed. Categories can be combined into residential, commercial, industrial, public, etc.

### **10010 Identify Essential Facilities by Parish or Community**

HAZUS will be used to determine the number and value of medical care facilities (hospitals), emergency centers (police and fire centers), and schools.

### **10020 Identify High Potential Loss Facilities**

HAZUS will be used to determine the number and value of levees and dams, nuclear power plants, and military installations.

### **10030 Identify Transportation Systems**

HAZUS will be used to determine the number and value of highway bridges and segments, railway bridges and facilities, bus facilities, port facilities, ferry facilities, and airport facilities.

### **10040 Identify Agricultural Resources**

HAZUS will be used to determine acres, type, yield, and value of crops.

### **10050 Identify the Demographics of the Region**

HAZUS will be used to determine population, number of households, race and ethnicity of population, and owners versus renters within the region.

### **10060 Identify the Number of Vehicles in an Area**

HAZUS will be used to determine the number and value of cars and light and heavy trucks.

### **10070 Develop Uncertainty Ranges for General Building Count and Valuation**

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Develop range rather than single point for number and value of structures incorporate into displays provided by GIS.

#### **10080 Estimate Emergency Spending in Areas Following the Storm**

Develop estimates for tons of debris generated and cost of clean-up; time spent by residents in clean up and filing insurance claims; and temporary housing needs of residents flooded. This information will be incorporated into displays provided by GIS.

### **REVIEW**

#### **Preliminary E&D ITR**

An ITR will be performed when the preliminary DS WSEL, preliminary designs, geotechnical database, and the DEM have been developed. Comments will be recorded and addressed and utilized in the refinement of these products.

#### **Refined E&D ITR**

Once the refined DS WSEL and designs have been complete, an ITR will be conducted. All comments will be recorded and addressed.

#### **Draft final report/PEIS ITR**

An ITR will be conducted when the draft report and draft PEIS are complete. The review will be completed prior to publication of the notice of availability. Responses to comments will be made prior to public release.

### **INTERNATIONAL SCIENCE AND TECHNOLOGY**

A team on international experts from academia, agencies, and the private sector will conduct reviews throughout the process and provide guidance to the Executive Board on innovative solutions and science and technology needs.

### **PUBLIC INVOLVEMENT**

A Public Involvement process will involve engaging Federal, State, and local agencies, the public, and stakeholder groups in the development, evaluation and recommendation of plans. The success of this activity will be dependent upon the ability to: provide opportunities for meaningful input to the process; adapt to issues and/or concerns as they arrive; provide continuous exchanges of information throughout the planning process; and proactively reach out to interested parties.

### **REAL ESTATE**

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Rights of entry will be obtained for all required field data collection activities early in the study process. Additionally, as designs are being developed, real estate data will be collected to facilitate the identification of the nature and extent of required real estate interests to be acquired, potential relocations, numbers of acquisitions, etc. The FTR will include an analysis comparable in level of detail to a real estate plan.

## **CONTRACTING**

An Acquisition Plan for procuring professional services and construction contracts will be developed early in the development of the Preliminary Technical Report.

## **CONSTRUCTION**

A plan and schedule of construction activities will be developed and provided in the Final Technical Report.

## **OPERATIONS AND MAINTENANCE**

Preliminary descriptions of operations and maintenance activities and costs will be developed for the FTR. Additionally, a draft water control manual will be developed as a part of the Final Technical Report to define water management plans that will be required to meet the project goals and objectives.

### **9. Resource Assignments.**

Figures 9a – 9c show Responsible (R) and Supporting (S) resource assignments by organization and task.

### **10. Cost Estimate.**

Figures 10a – 10c present a rough cost estimate, based on the following simplifying assumptions: (1) \$20 million available budget, (2) average daily labor cost for each team member to the project of \$1,000/day, (3) resource costs of team members equal to 10% of labor cost, (4) travel costs of team members equal to 10% of labor cost, and (5) field data collection costs of 50% of the project development budget, and (6) PM, PDT, ITR and IPR team members are the only participants funded under the project.

Responsibility Matrix																
Task Description	Project Mgt Team		Management Integration Team	Plan Formulation Team	Independent Technical Review Team	Engineering and Design Mgt Team										Information Management and Access Team
	Project Manager	Deputy Project Manager				Engineering Control Team	Spatial Analysis and GIS Team	Coastal & Hyd Design Team	Struct/Mech/Elec Design Team	Cost Eng Team	Hydrodynamic Modeling Team	Mapping Team	Geodetic and Geotech Team	StatRisk Team	Coastal & Hyd StatRisk Team	Geotechnical and Geology Team
<b>Planning and Project Management</b>																
1000 PM gains Exec guidance and forms PDT	R															
1100 PM assigns Team Leads and manages project	R															
1200 Review legislation and set process w/ PDT	R															
1300 Iden scope, tasks, products, and activity network w/ PDT	R	S	S	S				S	S	S	S	S	S	S		
1400 Resource tasks and forecast obligations and work schedule	R	S	S	S				S	S	S	S	S	S	S	S	S
1500 Compile PMP and distribute	R	S	S													
1600 Form PUs based on PPKR conds and DS legislation				R												
1700 Formulate DS plans by PU				R												
1800 Compile DS preliminary tech rpt and merge with PEIS			R													
1810 Refine DS final tech rpt/PEIS			R													
<b>SPATIAL ANALYSIS AND GIS</b>																
2000 Compile spatial data to support alternative analyses design							R	S	S	S	S	S	S		S	S
2100 Spatial analysis of protected and unprotected areas from each design alternative							R				S	S				
<b>INFORMATION MANAGEMENT AND ACCESS</b>																
2500 Design and establish internal data access/management site													R			
2510 Determine taxonomy for data organization													R			
2520 Provide user support, operate, maintain, modify internal access site FY06													R			
2600 Design and establish public information access site													R			
2610 Define QA/QC and data distribution protocols													R			
2620 Provide user support, operate, maintain, modify public access site FY06													R			
2630 Draft/coordinate external data communications plan for public site													R			
2700 Configure and establish IPET data sharing capability													R			
2800 Configure and establish data integration with GIS analysis sub-task													R			
2900 Acquire dedicated storage/hardware/software													R			
<b>Hydrology and Hydraulics</b>																
3000 Define current/future DS conds and paths over S LA											S			R		
3100 Det prelim DS storm action WSELs for PPKR conds											R			S		
3110 Det refined DS storm action WSELs for PPKR conds											R			S		
3120 Det prelim DS WSEL responses to prelim struc plcmnts											R			S		
3130 Chk DS WSELs for suffncy agnst refined structs, address UC											R			S		
3150 Det prelim DS hydrodyn forces for PPKR conds							R				S					
3160 Det refined DS HF for PPKR conds							R				S					
3170 Det prelim DS hydrodyn forces to prelim struct plcmnts							R				S					
3180 Chk DS HF for suffncy agnst refined structs, address UC							R				S					
3200 Model/map PPKR HGM and constituent transport											R			S		
3300 Optimizing the reliability of Multiple Lines of Defense for providing increased hurricane Protection in south Louisiana																
<b>Surveying/mapping</b>																
4000 Build PPKR datum-corrected DEM terrain & infrastrct											R					

**Figure 9a. Resource Matrix.**

Task Description	Responsibility Matrix																		
	Project Mgt Team	Engineering and Design Mgt Team																	
		Management Integration Team	Plan Formulation Team	Independent Technical Review Team	Engineering Control Team	Spatial Analysis and GIS Team	Coastal & Hyd Design Team	Struct/Mech/Elec Design Team	Cost Eng Team	Hydrodynamic Modeling Team	Mapping Team	Geodetic and Mapping Team	Geotech & Struct Stat/Risk Team	Coastal & Hyd Stat/Risk Team	Geotechnical and Geology Team	U&M Consistency Team	Information Management and Access Team	Innovative Tech Team	Env Design & Eval Team
<b>Geology/geotechnical</b>																			
5000 Map current/future eng geology & quantify geotech performance													S		R				
<b>Engineering &amp; Design</b>																			
6000 Investigate IT, conduct E&D, Const. and O&M concept planning																	R		
6010 Form eng risk and uncertainty models in perspective of FSs								S					R		S				
6020 Characterize risk and uncertainty in perspective of FSs								S					R		S				
6100 Conduct prelim E&D for DS								R							R			R	
6200 Conduct refined E&D for Ds								R							R			R	
6600 Compile eng apndx					R										R				
<b>Cost Engineering</b>																			
7000 Conduct prelim cost engineering								S	S	R					S				
7100 Conduct refined cost engineering by PU							S	S	R						S				
<b>Environmental</b>																			
8000 Initiate PEIS process																		R	
8010 Prepare purpose and need for action																		R	
8100 PEIS notice of intent																		R	
8110 Public scoping (concurrent: existing cond, data gathering)		S	S			S	S								S			R	
8200 Map PPKR habitat and historical landscape change		S																R	
8300 Develop alternatives (Conc: define no action)			R			S	S								S			S	
8350 Solicit/document public comments on prelim plans		S	S			S	S								S			S	
8390 Screen alternatives		S	R			S	S								S			S	
8400 Impact analysis on final plans (pos/neg) by PU		S	R			S	S								S			S	
8500 Prepare report/PDPEIS		S	S			S	S								S			S	
8600 Prepare report/DPEIS		S	S			S	S								S			S	
8650 Solicit/document public comments on DPEIS		S	S			S	S								S			S	
8700 Prepare Report/FEIS		S	S			S	S								S			S	
Draft ROD																		R	
<b>Urban Planning</b>																			
9000 Map PPKR urban planning development		S	S															S	R
9100 Det prelim urban planning impacts (pos/neg)		S	S															S	R
9200 Portray alternatives in terms of risk and cost in context of urban redevelopment plans for Pus at DS prot'n									S		S	S						R	
<b>Economics</b>																			
10000 Determine general building stock in study area																			R
10010 Identify essential facilities by parish or community																			R
10020 Identify high potential loss facilities																			R
10030 Identify transportation systems																			R
10040 Identify agricultural resources																			R
10050 Identify the demographics of the region																			R
10060 Identify the number of vehicles in an area																			R
10070 Develop uncertainty ranges for general building count and valuation																			R

**Figure 9b. Resource Matrix.**

Task Description	Responsibility Matrix																
	Project Mgt Team	Engineering and Design Mgt Team															
		Independent Technical Review Team	Plan Formulation Team	Management Integration Team	Engineering Control Team	Spatial Analysis and GIS Team	Coastal & Hyd Design Team	Struct/Mech/Elec Design Team	Cost Eng Team	Hydrodynamic Modeling Team	Mapping Team	Geotech and Stat/Risk Team	Coastal & Hyd Stat/Risk Team	Geotechnical and Geology Team	U&M Consistency Team	Information Management and Access Team	Innovative Tech Team
10080 Estimate emergency spending in areas following the storm																	
<b>Review</b>																	
Preliminary E&D ITR				S	R	S											
Refined E&D ITR				S	R	S											
Draft final rpt/PEIS ITR				S	R	S											
International Science and Technology																	
<b>Public Involvement</b>																	
<b>Real Estate</b>																	
Obtain ROE for field data collection				S	S	S	S	S	S	S	S	S	S	S	S		
<b>Contracting</b>				S	S	S	S	S	S	S	S	S	S	S	S		
<b>Construction</b>																	
<b>Operations and maintenance</b>																	

**Figure 9c. Resource Matrix.**

Task Description	Project Mgt Team		Engineering and Design Mgt Team														Cost Estimate (\$1000)
	Project Manager	Deputy Project Manager	Management Integration Team	Plan Formulation Team	Independent Technical Review Team	Engineering Control Team	Spatial Analysis and GIS Team	Coastal & Hyd Design Team	Struct/Mech/Elec Design Team	Cost Eng Team	Hydrodynamic Modeling Team	Mapping Team	Geotech and Stat/Risk Team	Coastal & Hyd Stat/Risk Team	Geotechnical and Geology Team	O&M Consistency Team	
<b>Planning and Project Management</b>																	
1000 PM gains Exec guidance and forms PDT	5																\$ 5
1100 PM assigns Team Leads and manages project	5																\$ 5
1200 Review legislation and set process w/ PDT	5			5													\$ 44
1300 Iden scope, tasks, products, and activity network w/ PDT	10	5	20	5		2		2	2	2	2	2	2	2	2	2	\$ 74
1400 Resource tasks and forecast obligations and work schedule	20	20	20	5		2		2	2	2	2	2	2	2	2	2	\$ 99
1500 Compile PMP and distribute	5	5	5	5		2		2	2	2	2	2	2	2	2	2	\$ 54
1600 Form PUs based on PPKR conds and DS legislation				10													\$ 10
1700 Formulate DS plans by PU				10													\$ 10
1800 Compile DS preliminary tech rpt			50														\$ 50
1810 Refine DS final tech rpt/PEIS			50														\$ 50
<b>SPATIAL ANALYSIS AND GIS</b>																	
2000 Compile spatial data to support alternative analyses design						300											\$ 300
2100 Spatial analysis of protected and unprotected areas from each design alternative						100											\$ 100
<b>INFORMATION MANAGEMENT AND ACCESS</b>																	
2500 Design and establish internal data access/management site															25		\$ 25
2510 Determine taxonomy for data organization															30		\$ 30
2520 Provide user support, operate, maintain, modify internal access site FY06															50		\$ 50
2600 Design and establish public information access site															20		\$ 20
2610 Define QA/QC and data distribution protocols															10		\$ 10
2620 Provide user support, operate, maintain, modify public access site FY06															25		\$ 25
2630 Draft/coordinate external data communications plan for public site															20		\$ 20
2700 Configure and establish IPET data sharing capability															10		\$ 10
2800 Configure and establish data integration with GIS analysis sub-task															20		\$ 20
2900 Acquire dedicated storage/hardware/software															20		\$ 20
<b>Hydrology and Hydraulics</b>																	
3000 Define current/future DS conds and paths over S LA										20				20			\$ 40
3100 Det prelim DS storm action WSELs for PPKR conds										100				50			\$ 150
3110 Det refined DS storm action WSELs for PPKR conds										100				50			\$ 150
3120 Det prelim DS WSEL responses to prelim struc plcmnts										100				50			\$ 150
3130 Chk DS WSELs for suffncy agnst refined structs, address UC										100				50			\$ 150
3150 Det prelim DS hydrodyn forces for PPKR conds							100			50							\$ 150
3160 Det refined DS HF for PPKR conds							100			50							\$ 150
3170 Det prelim DS hydrodyn forces to prelim struct plcmnts							100			50							\$ 150
3180 Chk DS HF for suffncy agnst refined structs, address UC							100			50							\$ 150
3200 Model/map PPKR HGM and constituent transport										50				50			\$ 100
3300 Optimizing the reliability of Multiple Lines of Defense for providing increased hurricane Protection in south Louisiana																	\$ -
<b>Surveying/mapping</b>																	
4000 Build PPKR datum-corrected DEM terrain & infrastruct										1000							\$ 1,000

**Figure 10a. Cost Estimate (Rough).**



Task Description	Engineering and Design Mgt Team														Cost Estimate (\$1000)
	Project Mgt Team	Management Integration Team	Plan Formulation Team	Independent Technical Review Team	Engineering Control Team	Spatial Analysis and GIS Team	Coastal & Hyd Design Team	Struct/Mech/Elec Design Team	Cost Eng Team	Hydrodynamic Modeling Team	Geodetic and Mapping Team	Geotech & Struct StarRisk Team	Coastal & Hyd StarRisk Team	Geotechnical and Geology Team	
<b>Geology/geotechnical</b>															
5000 Map current/future eng geology & quantify geotech performance												100		1500	\$ 1,600
<b>Engineering &amp; Design</b>															
6000 Investigate IT, conduct E&D, Const. and O&M concept planning															\$ 500
6010 Form eng risk and uncertainty models in perspective of FSs								100				100		100	\$ 300
6020 Characterize risk and uncertainty in perspective of FSs								100				100		100	\$ 300
6100 Conduct prelim E&D for DS								500						500	\$ 1,500
6200 Conduct refined E&D for Ds								1000						500	\$ 2,000
6600 Compile eng apndx					500										\$ 500
<b>Cost Engineering</b>															
7000 Conduct prelim cost engineering							100	100	300					100	\$ 600
7100 Conduct refined cost engineering by PU							100	100	300					100	\$ 600
<b>Environmental</b>															
8000 Initiate PEIS process															\$ 100
8010 Prepare purpose and need for action															\$ 100
0100 PEIS notice of intent															\$ 100
8110 Public scoping (concurrent: existing cond, data gathering)		10	10				10	10						10	\$ 450
8200 Map PPKR habitat and historical landscape change		10													\$ 420
8300 Develop alternatives (Conc: define no action)			10				10	10						10	\$ 450
8350 Solicit/document public comments on prelim plans		10	10				10	10						10	\$ 360
8390 Screen alternatives		10	10				10	10						10	\$ 360
8400 Impact analysis on final plans (pos/neg) by PU		10	10				10	10						10	\$ 360
8500 Prepare report/PDPEIS		10	10				10	10						10	\$ 1,060
8600 Prepare report/DPEIS		10	10				10	10						10	\$ 1,060
8650 Solicit/document public comments on DPEIS		10	10				10	10						10	\$ 560
8700 Prepare Report/FEIS		10	10				10	10						10	\$ 560
Draft ROD															\$ 100
<b>Urban Planning</b>															
9000 Map PPKR urban planning development		10	10												\$ 420
9100 Det prelim urban planning impacts (pos/neg)		10	10												\$ 420
9200 Portray alternatives in terms of risk and cost in context of urban redevelopment plans for Pus at DS prot'h									10		10	10			\$ 180
<b>Economics</b>															
10000 Determine general building stock in study area															\$ 135
10010 Identify essential facilities by parish or community															\$ 49
10020 Identify high potential loss facilities															\$ 49
10030 Identify transportation systems															\$ 49
10040 Identify agricultural resources															\$ 49
10050 Identify the demographics of the region															\$ 49
10060 Identify the number of vehicles in an area															\$ 49
10070 Develop uncertainty ranges for general building count and valuation															\$ 32
10080 Estimate emergency spending in areas following the storm															\$ 32

**Figure 10b. Cost Estimate (Rough).**

Task Description	Project Mgt Team	Engineering and Design Mgt Team																	Cost Estimate (\$1000)										
		Project Manager	Deputy Project Manager	Management Integration Team	Plan Formulation Team	Independent Technical Review Team	Engineering Control Team	Spatial Analysis and GIS Team	Coastal & Hyd Design Team	Struct/Mech/Elec Design Team	Cost Eng Team	Hydrodynamic Modeling Team	Mapping Team	Geodetic and Stat/Risk Team	Geotech & Struct Stat/Risk Team	Coastal & Hyd Stat/Risk Team	Geotechnical and Geology Team	O&M Consistency Team		Information Management and Access Team	Innovative Tech Team	Env Design & Eval Team	Environmental Compliance Team	Urban Planning Team	Economics Team	Real Estate Team	Contracting Team	Legal Team	
Review																												\$ -	
Preliminary E&D ITR				10	10	10	10	10	10	10	10	10	10	10	10	10	10	10		10	10	10	10		10	10	10	10	\$ 200
Refined E&D ITR				10	10	10	10	10	10	10	10	10	10	10	10	10	10	10		10	10	10	10		10	10	10	10	\$ 200
Draft final rpt/PEIS ITR				10	10	10	10	10	10	10	10	10	10	10	10	10	10	10		10	10	10	10		10	10	10	10	\$ 200
Science and Technology Peer Review Board																												\$ -	
Public Involvement			300																									\$ 300	
Real Estate																													
Obtain ROE for field data collection			10	2		2		2	2	2	2	2	2	2	2	2	2	2							300			\$ 326	
Contracting			10	2		2		2	2	2	2	2	2	2	2	2	2			2		2	2			200		\$ 236	
Construction																			100									\$ 100	
Operations and maintenance																		100										\$ 100	
Total =																											\$ 20,486,000		

**Figure 10c. Cost Estimate (Rough).**

## **11. Six-Month Report to Congress Preparation Schedule.**

December 30, 2006	Defense Appropriations Act signed by President Bush
December 30, 2006	first draft Project Management Plan distributed
January 11-12, 2006	Policy guidance development meetings
January 20, 2006	PMP development meeting with State of Louisiana
January 25, 2006	PMP development meeting with State of Louisiana
January 30, 2006	Policy Guidance Memorandum (PGM) signed
February 3, 2006	Interagency Environmental Planning Team draft basin assessments compiled
February 6, 2006	Draft Communications Plan distributed for review and comment
February 6, 2006	Project Delivery Team (PDT) kickoff, PMP walk through, and Group Solutions, Inc. facilitation test run
February 7, 2006	Begin models on interagency environmental planning team options
February 10, 2006	Cooperating agency letters mailed
February 10, 2006	Develop draft report outline
February 10, 2006	Communications Plan approved and implemented
February 10, 2006	Approval of draft report outline
February 11, 2006	Submit Project Management Plan (PMP) for approval
February 13-14, 2006	Initial plan formulation workshop with local governments, levee boards, and stakeholder groups
February 14, 2006	Initial results report from Plan Formulation workshop available
February 15, 2006	Alignment and alternative combination meeting
February 16, 2006	Set up alternatives from Plan Formulation Workshop for model execution
February 16, 2006	Notice of Intent sent to Federal Register for publication

February 17, 2006	Public notice announcing scoping meetings distributed
February 20, 2006	President's Day Holiday
February 21, 2006	Delivery of Group Solutions first draft of plan formulation report
February 22, 2006	In-Progress Review
February 24, 2006	PDT comments returned to Group Solutions
February 27, 2006	PDT meeting
March 2-3, 2006	Engineering and Design Technical Approaches Workshop
March 6, 2006	PDT meeting
March 8, 2006	In-Progress Review
March 9, 2006	Begin Scoping meetings (March 9-16, Lake Charles, Lafayette, Thibodau, and New Orleans)
March 9, 2006	Public Scoping Meeting – New Orleans, LA
March 9, 2006	Initial storm surge model results completed
March 13, 2006	PDT meeting
March 14, 2006	Public Scoping Meeting - Thibodau, LA
March 15, 2006	Public Scoping Meeting – Lake Charles, LA
March 15, 2006	Surge modeling complete for alignment #1 T1-T5
March 15, 2006	Preparation of templates for cost estimates
March 15, 2006	Final Report on plan formulation workshop from Group Solutions
March 16, 2006	Public Scoping Meeting – Lafayette, LA
March 20, 2006	PDT meeting
March 21-22, 2006	Site visit MVN with ITR and EPR teams
March 22, 2006	Report Content Briefing (include recommendations for component roll out)

March 22, 2006	In-Progress Review
March 22, 2006	Surge modeling complete for alignments #2 & #3 T1-T3-T6T2-T7
March 23, 2006	Steering Committee meeting
March 24, 2006	Nearshore wave modeling complete for alignment #1 T1-T5
March 24, 2006	Nearshore wave modeling complete for alignments #4 & #5
March 27, 2006	PDT meeting
March 31, 2006	Surge modeling complete for alignments #4 & #5
April 3, 2006	CPRA Plan Formulation Process Development Meeting
April 5, 2006	LCA-LaCPR Program Management Team Meeting
April 6, 2006	PDT Report Writing Meeting
April 10, 2006	First Draft of Preliminary Technical Report distributed for joint review
April 10, 2006	PDT meeting
April 10, 2006	Revised draft report sent to North Atlantic Division for Independent Technical Review through Center of Expertise
April 12, 2006	ITR/EPR review of draft initiated with PCX teams; In-Progress Review for General Crear
April 14, 2006	Surge modeling complete for alignments #1 & #2 T8-T10-T9-T6-T7; In-Progress Review for General Riley; Comments on first draft of PTR due.
April 17, 2006	PDT meeting
April 18, 2006	USACE Hurricane Protection System Field Hearing 12:00 pm
April 19, 2006	Plan Formulation Meeting with State in Baton Rouge
April 20, 2006	Independent Technical Review Comments received from New York District review team
April 21, 2006	Nearshore wave modeling complete for alignments #1 & #2
April 21, 2006	Surge modeling complete for alignments #1 & #2 & #3 & #5 all tracks

April 24, 2006	PDT meeting
April 25, 2006	Independent Technical Review comments resolved and incorporated into draft report; (T)LACPR Steering Committee VTC (0900-1000); HPS IPR for BG Crear
April 26, 2006	(T)LACPR Briefings for ASA(CW), HQ, and Congressional Staff in DC
April 27, 2006	(T)Partnering Session for PMT & PDT (0900-1600); HPS IPR for MG Riley
April 28, 2006	All model results available; LACPR IPR for MG Riley
May 1, 2006	PDT meeting
May 2, 2006	External Peer Review initiated with overview and content briefings at MVN
May 3, 2006	In-Progress Review – LACPR Briefings for ASA(CW), HQ, and Congressional Staff in DC
May 3, 2006	External Peer Review working review with team on stand-by
May 8, 2006	CPRA Meeting at 9:30am and PDT meeting at 1:00pm
May 9, 2006	Interactive report back of Independent Peer Review comments
May 11, 2006	ITR/EPR final review comments received
May 15, 2006	Final Review Draft of Preliminary Technical Report released; PDT meeting at 1:00pm
May 12, 2006	(T)Integrated LaCPR/LCA PMT at LSU
May 17, 2006	MS Coastal Study In-Progress Review
May 18, 2006	Steering Committee meeting - Full report content briefing
May 22, 2006	PDT meeting
May 23, 2006	Vertical Team comments due to PDT for resolution
May 24, 2006	LaCPR Briefings in Washington, DC for ASA(CW), USACE-HQ, and Congressional Staff
May 29, 2006	Memorial Day Holiday

May 31, 2006	Preliminary Technical Report transmitted for final review-approval through MVD-USACE/HQ-ASA(CW)
June 5, 2006	PDT meeting
June 8, 2006	All levels of review completed for Preliminary Technical Report
June 12, 2006	Send Report to Printer; PDT Meeting 1:00 pm
June 19, 2006	PDT Meeting 1:00 pm
June 20 -22, 2006	Report content briefings for local governments
June 23, 2006	Receive report copies
June 26, 2006	PDT Meeting 1:00 pm
June 28, 2006	Distribute report to Congress and conduct staff briefings at DC level
June 30, 2006	Public release of Preliminary Technical Report to Congress

## **12. 24-Month Programmatic Environmental Impact Statement (PEIS) Schedule.**

August 1, 2006	Finish preparing Alternatives, Purpose and Need, Affected Environment,
September 1, 2006	Finish preparing Existing Conditions
October 1, 2006	Finish preparing Future Without, No Action,
December 15, 2006	Start sending sections to ITR and IPR for review
February 5, 2007	Finish preparing Environmental Consequences, all sections sent for review
February, 19, 2007	Complete ITR and IPR comment resolution
March 5, 2007	Send to HQ for review
May 5, 2007	Send Draft PEIS to printer
May 25, 2007	Begin 45-day public review
July 10, 2007	End of first comment period

August 10, 2007	Final Internal Review completed
October 10, 2007	Send Final PEIS to printer
October 24, 2007	Send FEIS out for 30-day comment period
November 23, 2007	Review Final comments and Draft ROD
December 7, 2007	Send to printer
December 23, 2007	MVD for Transmittal
December 30, 2007	Send report and FPEIS to Congress

Figure 11 provides a graphical schematic of the Preliminary Report to Congress preparation schedule:



Figure 11. Report Development.



## **Appendix A - Policy Guidance Memo**



**DEPARTMENT OF THE ARMY**  
U.S. ARMY CORPS OF ENGINEERS  
WASHINGTON, D.C. 20314-1000

JAN 30 2006

CECW-MVD

MEMORANDUM FOR Commander, Mississippi Valley Division

SUBJECT: South Louisiana Hurricane Protection and Restoration, Policy Guidance Memorandum

1. References:

- a. The Energy and Water Development Appropriations Act, 2006 (P.L. 109-103), 19 November 2005, cite enclosed.
- b. The Department of Defense Appropriations Act, 2006 (P.L. 109-148) 30 December 2005, cites enclosed.
- c. Vertical Team Meeting, 11-12 January 2006, CEMVN District Office.
- d. EC 1105-2-408, Peer Review of Decision Documents, 31 May 2005.
- e. EC 1105-2-409, Planning in a Collaborative Environment, 31 May 2005.

2. General Direction.

a. The South Louisiana Hurricane Protection and Restoration effort shall be conducted to produce reports required by reference 1(b). As discussed at the vertical team meeting (reference 1(c)), analyses will be included in the technical reports or reports on component areas of the larger protection system to support possible recommendations for authorization by the Chief of Engineers and the Assistant Secretary of the Army (Civil Works) (ASA(CW)).

b. The South Louisiana hurricane protection efforts must be fully integrated with coastal ecosystem restoration efforts. While ecosystem restoration projects must be justified on restoration of critical coastal ecosystems, reassessment of restoration measures must be done to ensure that coastal wetland restoration projects provide storm protection and reduce coastal storm surge and waves. Any recommended hurricane restoration and protection plan must also be consistent with other purposes and needs, such as riverine flood damage reduction and navigation. Project implementation priorities and cost share recommendations must be included in the report.

c. The South Louisiana Hurricane Protection and Restoration effort shall be closely coordinated with the Mississippi coastal area hurricane and storm damage reduction study authorized and funded in Chapter 3 of reference 1(b).

d. External Peer Review (EPR) and Independent Technical Review (ITR) will be conducted in accordance with reference 1(d) and will be done concurrently as the effort progresses to ensure report completion dates are met.

**Appendix a. Policy Guidance Memorandum**

CECW-MVD

SUBJECT: South Louisiana Hurricane Protection and Restoration, Policy Guidance  
Memorandum

3. Following are more specific guiding principles by which the formulation, analysis and design for the subject assessment shall be conducted.

a. In assessing the without-project condition, the PDT shall consider the measures identified in the Administration's \$3.1 billion restoration package as part of the without project conditions. Since some of these measures still require authorization, the vertical team will monitor authorizations and modify the without project conditions as warranted. Until the without project condition can be more clearly identified, more than one without project condition may need to be carried forward. Also, since it is unclear what areas of South Louisiana (and specifically what areas of New Orleans and vicinity) will be developed, the PDT shall approach this uncertainly through scenarios based analysis using best available information from State and local government, and predict a bracketed range of development possibilities for South Louisiana. As discussed at reference 1(c), the scope of this effort comprehensively covers all of South Louisiana from Pearl River to Sabine River.

b. Measures will be developed to provide up to two additional levels of Category 5 protection which span the range of the Category 5 hurricane scale and protection against a less severe storm as described below:

(1) A maximum level of protection for the most critical Category 5 hurricane(s) will be developed by the PDT. Modeling analysis and historical hurricanes will be used to determine the critical Category 5 hurricane(s) and its related storm surge along the southern Louisiana coastline.

(2) The PDT will define and design projects required to protect against a less critical, minimal Category 5 storm event.

(3) Using information collected and developed by the Interagency Performance Evaluation Task Force and any additional relevant information from National Research Council independent reviews, the PDT will design projects required to protect against a storm with the meteorological characteristics of Hurricane Katrina.

c. The formulation of measures will be based on a watershed assessment (storm damage, coastal restoration, riverine flooding, and navigation). The strategy for analyzing storm conditions will be developed by the PDT with review by the Independent Technical Review Team, detailed in the project management plan (PMP), and will proceed expeditiously following approval by HQUSACE.

d. In analyzing potential measures, the PDT will consider structural and non-structural measures, will evaluate the contributions of wetlands to the protection, and will consider interior drainage. The analyses will be limited to what can be completed within the 2-year timeframe.

e. The analysis and design of the subject project will comply with the National Environmental Policy Act (NEPA). The PDT will implement NEPA as efficiently and effectively as possible, produce a programmatic Environmental Impact Statement (EIS), and comply with other applicable environmental statutes.

#### **Appendix a. Policy Guidance Memorandum (continued)**

CECW-MVD

SUBJECT: South Louisiana Hurricane Protection and Restoration, Policy Guidance  
Memorandum

f. A traditional National Economic Development (NED) and National Ecosystem Restoration (NER) analyses will not be done, but a consequence analysis of assets at risk will be conducted. A framework for the analysis of measures will be developed in conjunction with the scenarios developed under paragraph 3.a. with review by the Independent Technical Review team, included in the PMP, and approved by the vertical team.

g. Measures will be developed that maintain options for recommending authorization, and the Corps will maintain close and timely coordination with ASA(CW) and the Office of Management and Budget (OMB) on authorization and vertical team matters.

h. Development of the analysis and design will be collaborative, comprehensive, and integrated. In accordance with EC 1105-2-409, Planning in a Collaborative Environment, representatives of other Federal, State, and local agencies will be invited to be members of the PDT, bringing their expertise, programs, and projects together with the Corps. Federal members on the PDT should include, but not be limited to, representatives of the Environmental Protection Agency, the Federal Emergency Management Agency, the U.S. Fish and Wildlife Service, the National Oceanic and Atmospheric Administration (including National Marine Fisheries Service and National Weather Service), and the U.S. Geological Survey. Activities will be coordinated with the State of Louisiana, appropriate local government and resource agencies, local stakeholders, and the public. The PDT will employ necessary means to coordinate with affected citizens to insure full opportunity for public involvement in the study. The public involvement plan will be developed by the PDT, detailed in the PMP, and provided to HQUSACE for concurrence

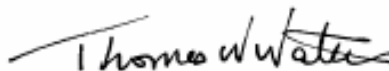
i. The PDT will schedule and conduct regular vertical team in-progress reviews (IPR). The initial IPR will address review and approval of the PMP, with particular focus on the PDT's storm analysis strategy and the framework for the analysis of measures.

j. The project delivery team (PDT) will coordinate and maintain an updated detailed project management plan (PMP) and relevant fact sheets, and will electronically re-distribute when revised.

k. Future guidance will follow an adaptive management approach.

4. More specific guidance based on the above principles will be incorporated in the documentation of the 11-12 January 2006 vertical team meeting (reference 1(c)).

FOR THE COMMANDER:



THOMAS W. WATERS, P.E.  
Chief, Mississippi Valley Division  
Regional Integration Team  
Directorate of Civil Works



## **Appendix a. Policy Guidance Memorandum (continued)**

### **South Louisiana Hurricane Protection and Restoration** *Legislative Direction*

#### ***Corps of Engineers - Civil, Investigations, The Energy and Water Development Appropriations Act, 2006 (P.L. 109-103), 19 November 2005:***

*"Provided further,* That using \$8,000,000 of the funds provided herein, the Secretary of the Army, acting through the Chief of Engineers, is directed to conduct a comprehensive hurricane protection study at full Federal expense to develop and present a full range of flood, coastal and hurricane protection measures exclusive of normal policy considerations for south Louisiana and the Secretary shall submit a feasibility report for short-term protection within 6 months of enactment of this Act, interim protection within 12 months of enactment of this Act and long-term comprehensive protection within 24 months of enactment of this Act: *Provided further,* That the Secretary shall consider providing protection for a storm surge equivalent to a Category 5 hurricane within the project area and may submit reports on component areas of the larger protection program for authorization as soon as practicable: *Provided further,* That the analysis shall be conducted in close coordination with the State of Louisiana and its appropriate agencies."

#### ***Section 5009, The Department of Defense Appropriations Act, 2006 (P.L. 109-148) 30 December 2005***

"SEC. 5009. Public Law 109-103 is amended under the heading "Corps of Engineers—Civil, Investigations", by striking "*Provided further,* That using \$8,000,000" and all that follows to the end of the paragraph, and inserting in lieu thereof, "*Provided further,* That using \$8,000,000 of the funds provided herein, the Secretary of the Army, acting through the Chief of Engineers, is directed to conduct a comprehensive hurricane protection analysis and design at full federal expense to develop and present a full range of flood control, coastal restoration, and hurricane protection measures exclusive of normal policy considerations for South Louisiana and the Secretary shall submit a preliminary technical report for comprehensive Category 5 protection within 6 months of enactment of this Act and a final technical report for Category 5 protection within 24 months of enactment of this Act: *Provided further,* That the Secretary shall consider providing protection for a storm surge equivalent to a Category 5 hurricane within the project area and may submit reports on component areas of the larger protection program for authorization as soon as practicable: *Provided further,* That the analysis shall be conducted in close coordination with the State of Louisiana and its appropriate agencies.""

#### ***Chapter 3, The Department of Defense Appropriations Act, 2006 (P.L. 109-148) 30 December 2005***

*"Provided further,* That none of the \$12,000,000 provided herein for the Louisiana Hurricane Protection Study shall be available for expenditure until the State of Louisiana establishes a single state or quasi-state entity to act as local sponsor for construction, operation and maintenance of all of the hurricane, storm damage reduction and flood control projects in the greater New Orleans and southeast Louisiana area"

## Minutes of Policy Guidance Development Meetings

**\*\*These minutes reflect discussions and in some cases present points that were not incorporated into the Policy Guidance Memorandum. However, providing the minutes offers some context to the PGM content as developed in the lengthy discussions and exchanges at the development meetings. In areas where the content of the minutes does not match the PGM the PGM will govern. If uncertainty persists then the PDT will consult the Vertical Team for further clarification and/or guidance.**

CEMVN-PM

10 FEB 06

MEMORANDUM FOR CECW-MVD through CEMVD-RB

SUBJECT: Minutes, Policy and Program Guidance Workshop, 11-12 JAN 06, Louisiana Coastal Protection and Restoration Project

**1. Reference.** CECW-MVD memorandum entitled “South Louisiana Hurricane Protection and Restoration, Policy Guidance, dated 30 JAN 06, hereafter referred to as the Policy and Program Guidance Memo, or “PGM”.

### **2. Introduction.**

A policy and program guidance workshop was held 10-11 JAN 06 at the USACE New Orleans District (CEMVN). Members of the Vertical Team, CEMVN, CESAM, State of Louisiana Governor’s Office, as well as Federal and State agencies, were in attendance. The following is a summary of resolutions attained through the workshop discussions. These minutes are a companion document to the memorandum cited in Section 1.

### **3. Legislation.**

a. Acts. Applicable legislation includes Corps of Engineers – Civil Investigations, The Energy and Water Appropriations Act, 2006 (P.L 109-103), 19 November 2005, Section 5009, The Department of Defense Appropriations Act, 2006 (P.L 109-148) 30 December 2005, and Chapter 3, The Department of Defense Appropriations Act, 2006 (P.L. 109-148), 30 December 2005, for assessment of Louisiana Coastal Protection and Restoration.

b. Timing. With the latter of the two acts described in Paragraph 3.a. signed into law on 30 DEC 05, it is considered that the project schedule starts then.

c. Title. This project is being termed an “assessment” and is being called “Louisiana Coastal Protection and Restoration Project (LACPR)”.

### **4. Nature of Work.** As interpreted from the Acts of Section 2:

a. Purpose. Examination of a full range of hurricane protection measures.

- b. Scope. Comprehensively covers all of South Louisiana from Pearl River to Sabine River.
- c. Need. Synergistically addresses hurricane protection, flood control, ecosystem restoration, and navigation mission areas.

## **5. Report.**

a. Technical Reports. An analysis and design effort will be conducted exclusive of normal policy considerations, to pass OMB tests, and also be responsive to Congress' intent. Preliminary and Final Technical Reports are due at 6 and 24 months from 30 DEC 05, respectively, from the Chief of Engineers to Congress. The technical reports will have a main text as concise as possible, placing details in stand alone appendices cross referenced to main text. The Preliminary Technical Report (PTR) will include the results of alternative plan screening, a description of spin off projects, as well as a description of work to be completed in the Final Technical Report (FTR). The FTR will have a companion Programmatic Environmental Impact Statement (PEIS), pursuant to the description of Paragraph 5.f.

### **(1) Contents of PTR.**

(A) Description of preliminary design storms and conditions used for hydrodynamic modeling.

(B) Description of conceptual alternative plans that were analyzed in the screening process, which were produced using results of plan formulation workshop held with participants coast wide.

(C) Results of screening analysis as described in Paragraph 5.c.(3)(iii).

(D) Description of concept designs and order of magnitude costs for alternative plans successfully passing the screening process.

(E) Description of spin off projects (see Section 10).

(F) Economic and environmental impacts of Katrina/Rita.

(G) No recommendation.

(H) Refined PMP for FTR completion.

### **(2) Contents of FTR.**

(A) Description of plans analyzed and designed; innovative technologies investigated for potential use; and conclusions made based on a comparison of project implementation costs, ecosystem benefits, and economic consequences of assets at risk among plans.

(B) Complete NEPA (i.e., final Programmatic EIS) with exception of acquiring executed ROD.

b. Organization and Project Management. An organizational structure that includes CEMVN, higher authority, and external project participants, will be developed to show the direction and communications framework. A Project Management Plan (PMP) will be developed and updated regularly to portray status of this effort, which will document organizational structure, project direction and communications, as well as describe: purpose, scope, and need; and task descriptions, activity network, schedule, products, and costs.

c. Planning.

(1) **Existing Conditions.** Existing conditions will be described using post-Katrina/Rita impact/conditions and Parish recovery plans in the 6 month report.

(2) **Future Without Project Conditions.** The assumption for Future Without Project (FWOP) conditions will be that: the President's \$3.1 billion package for reconstruction of existing authorized projects is in place; and a bracketed range of projected re-development in hurricane impacted areas. In a scenario-based approach, a parametric analysis will be conducted of historical re-development events following catastrophes where protection was replaced to facilitate recovery and predict a bracketed range of possibilities for South Louisiana re-development. Use will be made of LCA landscape change projections, to include impacts of Katrina/Rita and the more deteriorated year 2050 landscape. Authorized projects will be included in analysis.

(3) **Alternatives Analysis.**

(A) Plan Formulation and Evaluation. Plan formulation and evaluation will be conducted in the technical reports. Comparison of alternatives will not be conducted and there will be no official report recommendation. However, conclusions will be drawn from the analyses to characterize the relative values and performances of plans carried beyond screening for development.

(B) Integration of Related Work.

(i) **Coastal Restoration Components into Project Development Process.** The assessment will revisit the Louisiana Coastal Area (LCA) Comprehensive Plan and identify plans impacting hurricane protection locally and regionally. Further during this assessment, new restoration features will be identified that would further supplement hurricane protection. There will be creation of coastal restoration plans based on the preceding steps.

(ii) **Southwest Coastal Louisiana Study.** Address alternatives specified in Paragraph 11.f.

(C) Definitions.



(i) **Alternatives.** Alternatives will be generally defined as plans that accomplish protecting target development from inundation, which might include for example: (1) building engineered barrier structures around developments that keep surge and wave waters from entering interior, (2) strategically placing or replacing geomorphologic coastal features that reduce waves and surge hydrograph and/or delay arrival of surge and waves to areas, both protected and unprotected by engineered structures, (3) raising developments to above surge and wave levels, (4) moving developments inland away from impact of surge and waves.

(ii) **Measures.** Measures will be generally defined as structural and non-structural means through which alternatives would be accomplished. Example measures pursuant to the aforementioned alternatives might respectively include: (1) levees, floodwalls, floodgates, and locks, (2) wetland and barrier island protection, restoration, and creation, (3) program of elevating structures in place, (4) program of moving structures to higher ground, and (5) buy-outs of high-risk low-lying structures.

(iii) **Screening.** Alternatives/measures will be developed for conducting surge and wave model screening exercises to reveal plans that: (1) do not have acceptable risk of preventing inundation of protected areas, (2) have unacceptable risk of inducing unintended consequences of exacerbating surge and wave action to developments, and (3) have unintended consequences of unduly impacting significant environmental resources. The intent is to screen three to six initial alternatives down to between one and three for analysis and design past the screening phase.

d. Engineering.

(1) **Hydrodynamic Modeling.** Storm surge and waves will be modeled for alternatives during screening and post-screening project development. Design storms for modeling will be established. Modeling for screening purposes will include “engineered structures” to represent alternatives. In the PTR, there will be a discussion of how the addition of coastal features into modeling of alternatives reduces storm surges and waves. Examples of coastal features in this case include wetlands, barrier islands, river tributary banks, maritime forest ridges, and cheniers. The discussion will also identify modeling protocols that will be used for assessing the performance of coastal features in surge and wave reduction in the post-screening phase of alternatives development. The addition of coastal features to alternatives will be made in modeling conducted for the FTR.

(2) **Engineering and Design.** The PTR and FTR will be respectively conducted to a level of detail commensurate to 10% and 20% design. The Project Delivery Team (PDT) will define these respective levels of design for incorporation in PMP, cognizant of 6- and 24-month report completion requirements.<sup>1</sup> The FTR will have an implementation plan, which will include: cost share estimates for construction and Operations and Maintenance (O&M); construction schedule; and contracting plan.

e. Economic Analysis. National Economic Development (NED) analysis is not required for this assessment, but economic consequence analysis of assets at risk will be conducted. Damage

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<sup>1</sup> Rough order of magnitude (ROM) replaced % design.

reduction determinations, and the minimum 800 cfs drainage capacity requirements for Federal interest in investigations, per ER 1165-2-21, will not be conducted.

f. Environmental Compliance. Final Programmatic EIS (PEIS) will be completed commensurately with the final technical report, for a Record of Decision signed by Chief of Engineers after potential authorizations are made pursuant to FTR completion. The steps for completing this work are as follows:

(1) A plan will be mapped out for scoping and plan formulation workshop.

(2) A PEIS will be conducted for the entire coast initially, with an aim to finish the draft in two years for integration with the FTR. The PEIS process to be followed will be verified with the Vertical Team, pursuant to coordination with Council for Environmental Quality (CEQ) as described in Paragraph 15.c.

(3) EISs and/or Environmental Assessments (EAs) will be conducted in companion with “spin-off” projects.. The intent of the “spin-off” projects is to expedite implementation, not to extend the schedule beyond two years.

g. Real Estate.

(1) **Right-of-Entry for Field Investigations.** For expediency in project progress, higher authority will seek waiver of Right-of-Entry requirement that must be met by the Government in favor of shifting this burden to field data collection contractors. There will also be coordination with the State of Louisiana and its agencies on the possibility of performing field data collection through their mechanisms, if work can be expedited in this manner. To the maximum extent possible, field investigations will be performed on public rights of way and over navigable waters.

(2) **Real Estate Requirements.** A description of real estate requirements and costs at the gross appraisal level will be developed by the PDT, based on footprint of designs, highest and best use of identified properties, to include habitat usage, and recommended approach for execution of land acquisition.

## **6. Non-Federal Sponsor.**

a. Requirement. The assessment will be conducted in consultation with State of Louisiana and its agencies, operating through single State entity or quasi-State entity to act as local sponsor for construction, operations, and maintenance for hurricane, storm damage reduction, and flood control projects in the Greater New Orleans and southeast Louisiana area. Coordination is required between USACE and the State to determine if this includes Southeast Louisiana (SELA) Urban Flood Control Project. If not, it is up to the State, Jefferson Parish, the Sewerage and Water Board of New Orleans, and the individual sponsors for the St. Tammany work to go through their Congressional representatives to seek legislation excluding SELA governing bodies from this requirement.

b. Created State Entity. The State created the Coastal Wetlands Protection and Restoration Authority (CWPR) to develop a master plan, propose how to organize the levee boards, and other oversight activities in addition to acting as the lead coordinating entity for hurricane protection and coastal protection/restoration. The body is not legislated to act as a single entity as local sponsor for construction and O&M, as required in Paragraph 6.a. This is a point of discussion and further coordination required between USACE and the State.

**7. Vertical Team Coordination.** The assessment will be conducted in close coordination with elements of the Vertical Team, which includes OMB, Congress, ASA (CW), HQUSACE, CEMVD, and CEMVN. There will be frequent In-Progress Reviews (IPRs) with the Vertical Chain of Command on status of task completion according to schedule, issues for resolution, and benchmarking of work ahead against schedule, with description of course correction as needed to meet schedule and product delivery in a timely manner.

**8. Funding.** The assessment will be an \$8 million effort at full Federal expense (General Investigations Funding Appropriation), with an additional \$12 million available upon the State's legislation of single entity as described in Section 6. Program Managers will work with the State of Louisiana on cost sharing agreement and funds programming if the clarification described in Section 9 is not attained.

**9. Cost Sharing.** The PDT has made the assessment that funds provided for this work would not require a cost share per the Water Resources Development Act (WRDA) of 1986. Clarification as necessary will be sought by higher authority to address this concern.

## **10. Project Increments.**

a. Rationale. Components falling within the purpose, scope, and need of the assessment, having clear need for development and fitting as a baseline into any variation of overall plans to be considered for increased hurricane protection, will be the subject of "spin-off" technical reports of the format described in Section 5, which will be completed and submitted to higher authority for potential authorization prior to completion of the final technical report.

### b. Spin-Off Projects.

(1) **Definition.** Spin-off projects are projects that will be proceeded on without more formulation. Spin-off projects will have design reports with defined scope and expectations, containing enough information for a recommendation to proceed into Pre-Construction, Engineering, and Design (PED) by the Secretary of the Army, who has this authority. These design reports will contain a description of environmental impacts, risks/unknowns, a specified level of protection, and design/cost estimate to the same level of detail as the rest of the work in the FTR (20%).

(2) **Spin Off Project Identification.** One project that may be a candidate for spin off is restoration of the wetlands and barrier islands of the Breton Basin. CEMVN-PM will convene as soon as possible to develop a list of spin off projects for consideration by higher authority and to obtain approval to proceed with them as spin offs.

### (3) Spin Off Project Development Process.

(A) Schedules of projects will be produced without typical study procedures, i.e., in format of technical report exclusive of normal policy considerations.

(B) Development of spin off projects will be conducted with clear development needs for completion at points prior to completion of FTR.

(C) The approach for conducting spin off reports will be coordinated with the Vertical Team.

(D) All EIS documents will have a main text as concise as possible, placing details in stand alone appendices cross referenced to main text.

**11. Project Coordination.** Related existing efforts for hurricane protection will be reviewed for potential incorporation/modification without delay into South Louisiana Hurricane Protection Assessment, with emphasis on having a comprehensive approach to water management regionally. CEMVN-PM will meet regularly to identify a list of projects in this category. The initial list includes, but is not limited to:

a. Donaldsonville to the Gulf. There will be coordination with the Non-Federal Sponsor whether they wish to continue in this type of capacity on the study, in favor of potential incorporation of this scope of work into the assessment.

b. Morganza to the Gulf. There will be no delay in current effort to gain project authorization. Main objective is to derive consistency with this and the assessment.

c. Lower Atchafalaya Basin Reevaluation. There will be coordination with project interests whether they wish to this project to continue independently but consistently with assessment, or be merged into the assessment.

d. West Shore, Lake Pontchartrain Study. There will be coordination with the Non-Federal Sponsor whether they wish to continue in this type of capacity on the study, in favor of potential incorporation of this scope of work into the assessment.

e. Louisiana Coastal Area. Features of the 2005 Draft Chief's Report will be examined for incorporation into the assessment, with evaluation of additional coastal protection and restoration features to these for further hurricane protection that works in concert with engineered structures.

f. SELA Urban Flood Control. Features of the 2005 Draft Chief's Report will be examined for synergistic incorporation into the assessment, with evaluation of additional coastal protection and restoration features to these for further hurricane protection interoperably with engineered structures.

g. Southwest Coastal Louisiana, Louisiana. This study is described in House of Representatives, Committee on Transportation and Infrastructure Resolution, Docket 2747. It will be incorporated into the assessment, with the aim to meet Congress' intent in analysis.

h. Projects Outside CEMVN in Gulf of Mexico Region. CEMVN will coordinate with CESWD and CESAD to coordinate projects gulf-wide for consistency and compatibility. One potential project identified for coordination is Sabine-Neches Waterway Deepening Project.

**12. Participant Involvement.** Input will be sought from interests state-wide, working through the State and its agencies with an aim to develop a single plan that represents Federal and State legislated directives.

**13. Team Formation.**

a. Review Process. It was suggested that the review process should generally follow the language of H.R. 2864, Water Resources Development Act of 2005 (Introduced in House). However, subsequent guidance recommended following Engineering Circulars directing collaborative planning and peer review.

b. Peer Review. EC-1105-2-408 will be followed in establishing technical and peer review teams for this effort.

c. Independent Technical Review. Independent Technical Review (ITR) is defined by ER 1110-1-12 (Quality Management) and ER 1110-2-1200 (Plans and Specifications for Civil Works Projects). ITR will be conducted to ensure the proper selection and application of clearly established criteria, regulations, laws, codes, principles and professional procedures to ensure a quality product. ITR will also be performed to confirm the utilization of clearly justified and valid assumptions that are in accordance with policy. Members of the Hurricane and Storm Damage Prevention Center of Expertise, as well as the Coastal Community of Practice, will be engaged on conducting this assessment. The responsibilities for ITR are intended to be as follows:

- (1) Traditional independent review.
- (2) Engaged throughout development process early and often.
- (3) Lay out process for panel selection, get vertical team buy-in, and identify panel.
- (4) Provide early on education of report expectations.

d. In-Progress Review. The Vertical Team will be engaged for In-Progress Review (IPR), which is intended to accomplish the following items:

- (1) Identify roadblocks and elevate.
- (2) Identify resources needed by PM and PDT.
- (3) Review/comment on “living” PMP, distributed vertically by PM.
- (4) Review fact sheets for comment as regularly distributed vertically by PM.

e. Project Delivery Team. The assessment will have a PDT that includes the best available expertise in and outside government, nationally and from abroad.

#### **14. Parallel Tracking Items.**

- a. Coordinate to ensure Morganza to the Gulf continues on its path of authorization.
- b. Consider use of co-located team approach, Principal's Group formation, Regional Workgroup formation, and variances to EIA process via CEQ consultation (see Paragraph 15.c.).
- c. Consider hurricane protection issues associated with MRGO under the assessment.
- d. Consider O&M Program funded re-evaluation of MRGO to determine final disposition of channel by 1 MAR 06.
- e. Coordinate and acknowledge MRGO \$75 M restoration effort, as well as all authorized and funded efforts completed to date.

**15. Vertical Team and PDT Assignments.** The enclosure lists participants of the subject conference.

- a. Zoltan Montvai (ZM) checked with Earl Stockdale on interpretation of State levee board requirement and cost sharing for \$12 M, and understands this does apply unless legislation is amended.
- b. ZM coordinated with OMB and ASA to confirm/refine vertical team review process, particularly for 6-month report. MG Riley and BG Crear will brief Congress after plan formulation workshop and after completion of the 6-month report.
- c. On 17 JAN 06, ZM, Mark Matusiak, Tom Waters, Mark McKevitt, and MVN Environmental PDT members conducted a telecon with CEQ to suggest ways EIA process could be streamlined, such as conducting reduced level of details development, to meet schedule.
- d. Edmond Russo (ER) will work with modeling team on storm establishment and modeling approach for quantifying the combined performance of hurricane protection, coastal restoration, and urban flood control.
- e. MVN moves forward with start time of project as 30 DEC 05, developing schedule for 6 and 24 month reports for vertical team feedback.
- f. Greg Miller and Julie Morgan develop a communication plan in collaboration with State to integrate Federal and State reporting of project development process, progress, and issues.
- g. ER coordinates with MVN PM Branch Chiefs to identify projects for spin off under the assessment, as well as existing projects/studies that should be rolled up into the assessment.

**16. Future Guidance.** As the project ensues, an adaptive management approach will be taken by higher authority on evolution of guidance for conducting the assessment. CEMVN will review guidance changes and notify higher authority of anticipated impacts, if any, to project work completed, on going, and scheduled.

## **Appendix B – Communications Plan**

**DRAFT**  
**COMMUNICATIONS PLAN**  
**Category 5 Louisiana Coastal Protection and Restoration (LaCPR)**  
**(formerly South Louisiana Hurricane Protection and Restoration)**  
**March 2006**

Hurricanes Katrina and Rita made landfall in Louisiana during the 2005 storm season causing catastrophic damage to lives, property and natural resources. In response, the U.S. Congress has directed the Secretary of the Army through the Corps of Engineers to develop preliminary and final technical reports on the design and analysis for comprehensive Category 5 protection. The reports are to be submitted by June 30, 2006 (Preliminary Technical Report), and December 30, 2007 (Final Technical Report). The reports will present a full range of flood control, coastal restoration, and hurricane protection measures exclusive of normal policy considerations. The Corps of Engineers has formed a multi-agency and cross-institutional Project Delivery Team (PDT) to undertake the planning, analysis, and design tasks necessary to develop the Reports to Congress. A key component in the report's progress will be employment of a communications plan to outline the approach for transmitting information from the team to interested members of the public, media outlets, local governments, State partners, and other important decision makers and, as important, receiving and incorporating their comments into the report. This document outlines the Communications Plan for the team.

The primary goal of public outreach and involvement for the Louisiana Coastal Protection and Restoration (LaCPR) Reports to Congress project is to provide information and gather public input that could assist decision-making during the study. The Public Outreach and Involvement team views public outreach as a vehicle for information dissemination and education and sees public involvement as open, ongoing, two-way communication, both formal and informal, between agencies involved in planning a project and the public. In addition to the requirement by the National Environmental Policy Act (NEPA) for public involvement, the PDT desires that the public be informed, learn about, and better understand each other's views, the report development process, and report details. Public outreach and involvement is critical in developing partnerships with the public and stakeholder groups that would be interested in or impacted by the various alternative plans considered in the reports.

The PDT has reviewed public comments related to hurricane protection and storm recovery following the last hurricane season. Several lessons are very apparent from the numerous conversations, meetings, news stories and other commentary and the team is determined to heed these lessons and apply them to the conduct of outreach initiatives during the preparation of the reports.

- First, a primary comment from the public has been that **too many studies have been conducted** and not enough projects have been implemented (both levees and coastal restoration). While this may be a common sentiment regardless of the specific Corps of Engineers project, nonetheless it merits special attention given the unprecedented impact to communities in coastal Louisiana and the importance to which communities have placed upon levee protection and wetlands restoration in the aftermath of the 2005 hurricane season. In that light, the team is determined to make sure that the public is informed that the intent of this effort is to produce



analysis and design reports for Congress and that the efforts are as directed far from just another government study. This is further emphasized in the Congressional authorizing legislation for the reports in the direction to produce technical reports and the lack of reference to studies.

- Second, it is apparent that the widespread use of the Saffir-Simpson scale for weather forecast warnings and media reporting has established public **demand for levels of protection in south Louisiana tied to Category 5 events**. However, USACE designs and Congressional project authorizations have historically been centered on composite storms, or standard project hurricanes, that have characteristics that do not fit into a single Saffir-Simpson category but rather have winds, barometric pressures and storm surges falling within several categories. Congress has given the Corps of Engineers direction to design for Category 5 protection and the team will be challenged to meet that standard due to a number of factors including strike probabilities, lack of historical data on upper limits of storm strengths, coastal conditions and soil characteristics in south Louisiana. The effort provides an important opportunity to educate the public and reframe an understanding of the actions involved in designing, building and maintaining a system capable of protecting the area from storms with sustained winds greater than 155 miles per hour and storm surge heights greater than 18 ft.
- Third, the public has developed a **sense of urgency** calling for the government to build a stronger hurricane protection system. This expectation may not readily fit within the time frames established by the Congress and may also not fit the time needed for thorough design development and analysis and construction. The team is aware of these expectations and will operate with a similar sense of urgency. In addition, this Communications Plan carefully considers the needs of the technical team for conducting their work but recognizes opportunities for reporting progress and other developments that contribute to the overall goal of keeping the public and other interested parties informed.

Given the above lessons and factors the team will focus on consistency in its communication messages and strive to provide technically-supported information to the public in an understandable context and format. This will be particularly important because of the challenges inherent in designing a system to protect Louisiana's low-lying coastal communities from some of nature's most powerful storms.

### **Goals for Public Outreach and Involvement**

The LaCPR project will continue to build on previous public outreach and involvement efforts conducted throughout the LCA feasibility phase, while focusing on the specific problems, needs, and opportunities for the study area. The following goals for public outreach and involvement in the LaCPR Report have been identified:

- Educate to increase awareness, understanding, and support for the Technical Reports to Congress at a local, regional, and national level.
- Provide and promote effective intra- and interagency communication and support for the report preparation teams.

- Gather input from diverse groups to assist in identifying problems, opportunities, potential solutions, and impacts of the various alternatives.
- Provide extensive opportunities for public participation throughout the decision-making process, including frank discussions of inevitable trade-offs.
- Develop and implement a feedback process to the public concerning how their input has affected decisions such as alternatives development, analysis, and selection of optimum plans.
- Identify and engage public sectors including stakeholders, public officials, and academia to develop relationships critical to successful execution of the analysis, design, and report preparation phases of the work.
- Provide timely information to the public regarding the team's efforts.
- Establish and/or maintain an active role by project managers in the team's outreach and involvement process.

The report-specific outreach and involvement goals will be accomplished through the following process:

- 1) Identify audiences;
- 2) Provide educational materials and report specific information to these audiences;
- 3) Obtain public input, through forums and other avenues, regarding the development of coastal protection and restoration and flood control plans for south Louisiana;
- 4) Use public input to make decisions regarding the alternatives development, selection, and analysis in preparation of the reports; and
- 5) Provide feedback to the public as to the course of action taken relative to their input.

### **Tools to Implement the Public Outreach and Involvement Strategy**

NEPA Compliance – The National Environmental Policy Act (NEPA) of 1969 subjects all government projects to a public process that discloses environmental impacts and benefits. Depending upon the complexity and scope of a project, it produces one of two possible outputs: an Environmental Assessment (EA) or an Environment Impact Statement (EIS). In producing either of the documents, the goal is to fully disclose all of the impacts of various alternative plans and to enable plan selection in light of impacts and in compliance with environmental laws. In this case, a Programmatic Environmental Impact Statement will be produced for the Final Technical Report but preparation of the PEIS will begin before the release of the Preliminary Technical Report.

Public Meetings – Various meetings for public feedback will be hosted during the development of the reports. The public outreach and involvement team will select locations for the public meetings in coordination with the environmental planning team (i.e. PEIS coordinator and others). The public outreach and involvement team members will work with the project delivery team to plan and format presentation materials. The USACE and State of Louisiana public affairs offices will coordinate with their respective Outreach staff to notify the media through advisories, news releases and follow up telephone calls.

Targeted Workshops – Throughout the preparation process, opportunities will be developed for the public to obtain information through smaller, more interactive venues. Targeted for these workshops are civic and neighborhood associations, academia, environmental groups, coastal zone advisory committees, and non-governmental organizations (NGOs). This format provides optimum two-way communication opportunities – avenues for public information dissemination while enhancing community awareness and understanding. The public outreach and involvement team will develop presentation materials tailored to each specific audience.

Outreach to public officials and governmental agencies – PDT Project Managers will provide briefings to elected and appointed officials at all levels of government. In addition, report-specific information will be provided to State and Federal governmental agencies, including internally at the USACE and State of Louisiana. Tours of project areas will be provided as needed and the public outreach and involvement team will prepare and deliver materials and briefing packets.

Outreach to Stakeholder Groups – Due to the public's high level of interest in hurricane protection and coastal restoration, involving stakeholder groups in decisions will be especially important in both the preliminary and final reports. The project delivery and public outreach and involvement teams will identify stakeholder groups to focus efforts. The goal of involving these stakeholder groups is to promote long-term relationships and understanding of the report components. This activity involves coordination and preparation of meetings (to include pre- and post-scoping), briefings, and written correspondence with interests outside the USACE and the State of Louisiana. Additionally, several existing groups and committees, such as the Governor's Advisory Commission on Coastal Protection and Restoration, will be utilized to expand opportunities for the public to guide and influence the study process. Coordination with other groups will occur as needed or requested.

Publications and Presentation Materials – Throughout the report preparations, a variety of means will be employed to provide information to and solicit comment from the public. Examples include the following:

Home Page – A web/internet home page for the Louisiana Coastal Protection and Restoration project will be developed ([www.lacpr.usace.army.mil](http://www.lacpr.usace.army.mil)) that will be linked to the New Orleans District's home page (<http://www.mvn.usace.army.mil/>). The site will be periodically maintained and updated to allow information access for the project delivery team and the general public. A "Comment" link will be available for interactive communication. All publication and presentation materials will be accessible from the homepage.

*Publications* – Materials will be developed throughout the course of the LaCPR Report preparation phases and will include public notices that identify the purposes and locations of workshops and/or meetings, fact sheets, and newsletters.

*PowerPoint Presentations* – An LaCPR presentation will be developed for public speaking engagements. Specific LaCPR issue modules may be inserted into this presentation for targeted audiences. Duplicate copies of the presentation along with suggested text will be distributed to all team members and other interested parties.

*Press Kits* – A set of informational materials will be developed and remain current to provide to interested media outlets. Materials will consist of project background information, descriptions of project goals, maps, quotes from leadership about the project and its importance, and maps and other visual reference materials.

*News Releases* – News releases will be issued throughout the report preparation efforts, especially prior to the public workshops and/or meetings, to provide an opportunity to keep the media apprised of activities and issues.

*Exhibits and Displays* – A number of visual tools are needed for public engagements. Large displays for events and small portable displays for speaking engagements will be developed as necessary for use at fairs, conferences, seminars, and other events. Existing displays will be updated as needed.

## **Responsibilities**

Implementing the public outreach and involvement plan for the LaCPR Report will be a team effort requiring support from both the USACE and the State of Louisiana. Although the USACE will lead the effort, the talents and time of several Federal, State and local agencies will be necessary to improve the outreach and involvement plan.

## **Outreach Team Members**

Name	Affiliation	Contact Number
Julie Morgan	USACE – PM-C	504-862-2587
Gregory Miller	USACE – PM-C	504-862-2310
Rob Brown	USACE – PAO	504-862-2201
Norwyn Johnson	State of Louisiana	225-342-0924

## **Schedule for Outreach and Involvement Activities**

Particular outreach and involvement activities will be closely coordinated with the LaCPR project managers and will be based on project schedules, budgets, and milestones.

December 2005      1<sup>st</sup> workshop  
January 2006      Web site launch

February 2006	2 <sup>nd</sup> workshop
February 2006	Press release
February 2006	Public notice of scoping meetings
March 2006	3 <sup>rd</sup> workshop
March 2006	News Adds for scoping meetings
March 2006	Public Scoping Meetings
April 2006	Stakeholder updates and feedback
May 2006	Update on progress
June 2006	Preliminary Technical Report to Congress

At this point the team anticipates the following three rounds of stakeholder meetings:

- 1) To introduce the report development effort through a series of directed contacts and phone conversations.
- 2) Before the draft is presented to the public for comments a second round of directed contacts and phone calls will be executed, and
- 3) A series of office visit briefings to discuss the final report.

## **Appendix C – List of Acronyms**

## List of Acronyms

ADCIRC	Advanced Circulation model
ASA	Assistant Secretary of the Army
BAA	Board Agency Announcements
CDF	Cumulative Distribution Function
CEFMS	Corps of Engineers Financial Management System
CEMVN	New Orleans District
CEQ	Council for Environmental Quality
CHL	Coastal and Hydraulics Laboratory
CPRA	Coastal Protection and Restoration Authority
CRADAS	Cooperative Research and Development Agreements
CW	Civil Works
CWPRA	Coastal Wetlands Protection and Restoration Authority
DAA	Draft Array of Alternatives
DEM	Digital Elevation Model
DNR	Louisiana Department of Natural Resources
DOTD	Louisiana Department of Transportation and Development
DPEIS	Draft Programmatic Environmental Impact Statement
DS	Design Storm
E&D	Engineering and Design
EA	Environmental Assessment
EDT	Engineering & Design Team
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ERDC	Engineer Research and Development Center
ERP	External Review Panel
EST	Empirical Simulation Technique
FAA	Final Array of Alternatives
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FOIA	Freedom of Information Act
FS	Factor of Safety
FTR	Final Technical Report
FWOP	Future Without Project Conditions
FY	Fiscal Year
GIS	Geographic Information Systems
GIWW	Gulf Intracoastal Waterway
GPS	Global Positioning Survey
HAZUS	"Hazards US" - FEMA computer program
HF <sub>s</sub>	Hydrodynamic forces
HGM	Hydrogeomorphic
HQ	Headquarters
IPET	Interagency Performance Evaluation Task Force
IPR	In-progress review
IT	Information Technology
ITL	Information Technology Laboratory
ITR	Independent Technical Review
LACPR	Louisiana Coastal Protection and Restoration

## List of Acronyms

LCA	Louisiana Coastal Area
LSU	Louisiana State University
MIT	Management Integration Team
MR-GO	Mississippi River-Gulf Outlet
MVD	Mississippi Valley Division of the USACE
MVN	New Orleans District
NAVD	North American Vertical Datum
NED	National Economic Development
NEPA	National Environmental Policy Act
NFPC	National Nonstructural/Flood Proofing Committee - USACE
NGO	Non-Governmental Organizations
NOAA	National Oceanic and Atmospheric Administration
NRC	National Research Council
O&M	Operations and Maintenance
OMB	Office of Management and Budget
OMRR&R	Operations, Maintenance, Repair, Rehabilitation, and Replacement
P2	USACE Information Management Database
PCX	Planning Centers of Expertise-USACE
PDPEIS	Preliminary Draft Programmatic Environmental Impact Statement
PDT	Project Delivery Team
PED	Pre-Construction, Engineering, and Design
PEIS	Programmatic Environmental Impact Statement
PFT	Plan Formulation Team
PGM	Policy Guidance Memorandum
PM	Project Manager
PMH	Probable Maximum Hurricane
PMP	Project Management Plan
PMT	Project Management Team
PPKR	Pre- and Post-Katrina/Rita
PPPMD	Planning, Programs, and Project Management Division
PTR	Preliminary Technical Report
PU	Planning Unit
QA/QC	Quality Assurance/Quality Control
R&D	Research and Development
ROD	Record of Decision
ROM	Rough Order of Magnitude
SCDSC	Suite of Critical Design Storms and Conditions
SELA	Southeast Louisiana Urban Flood Control Project
SPH	Standard Project Hurricane
TL	Team Leader
UC	Unintended Consequences
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WRDA	Water Resources Development Act
WSELs	Water Surface Elevations